Collibra

ERP/CRM Integrator

User Guide

Version 7.7.11

Collibra

ERP/CRM Integrator User Guide

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You can find the most up-to-date technical documentation on our documentation site at

https://productresources.collibra.com/docs/erp-crm-integrator-ug/latest

Contents

What's new

User Guide

- Limitation for parallel imports.
- New View details form in the Viewing table details section
- Add HANA-based SAP BW system to model overview.
- Table DD_FIELDGRP added to Appendix A - Product Metamodel

Introduction

Describes how to use this manual.

This manual describes the various features of ERP/CRM Integrator in detail and in particular the powerful features for exploring the metadata extracted from your chosen environment.

Where do I find what I need?

Installing and configuring

For information on installing and configuring ERP/CRM Integrator, refer to the ERP/CRM Integrator 'Getting Started Guide'. ERP/CRM Integrator will need to be fully installed before you can attempt an extraction of metadata from your 'source' system.

Extracting metadata from the Enterprise Application

Once ERP/CRM Integrator is installed and configured, an extraction of metadata needs to be carried out by connecting to the Enterprise Application you require (e.g. SAP, PeopleSoft...). The detailed steps for achieving this are described in the ERP/CRM Integrator 'Getting Started Guide'.

Exploring the contents of the ERP/CRM Integrator repository

ERP/CRM Integrator's main purpose is to allow exploration of the data structures extracted from your environment and stored in the ERP/CRM Integrator Repository. To understand the features available, refer to the chapter on Browsing ERP/CRM Integrator metadata below..

Exporting metadata from ERP/CRM Integrator into other environments

Having located particular data structures with the ERP/CRM Integrator browsing interface, users may wish to export these data structures into other tools and formats. See the 'Exporting metadata from ERP/CRM Integrator' for more details.

Task Automation with ERP/CRM Integrator

Many of the main ERP/CRM Integrator capabilities can be run unattended. An introduction to these features can be found in Appendix D of this manual, and full details are in the 'ERP/CRM Integrator Task Automation Guide'.

ERP/CRM Integrator manual set

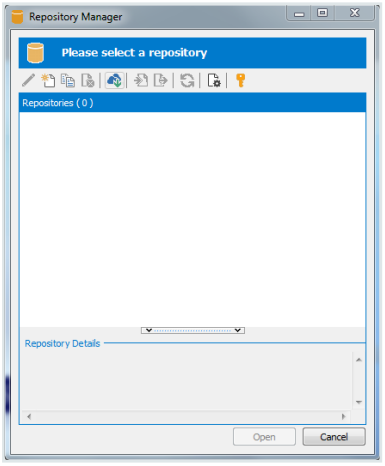
There are three ERP/CRM Integrator manuals supplied in Adobe Acrobat format (.pdf files) with the ERP/CRM Integrator software.

- Getting Started Guide: Use this manual for details of product installation and an overview of ERP/CRM Integrator features
- User Guide (this manual): Describes all of the ERP/CRM Integrator functions in detail
- Task Automation Guide: Explains how to Automate features of ERP/CRM Integrator like Extraction from the source Application.

The Repository Manager

Describes the features for creating and managing multiple sets of metadata in ERP/CRM Integrator

The ERP/CRM Integrator Repository Manager centralises all the features and functions related to creating, maintaining and managing one or more ERP/CRM Integrator repositories. On starting ERP/CRM Integrator, the Repository Manager form is displayed.



To open an existing Repository, select the appropriate entry from the list of repositories and click the ‘Open’ button.

Repository Manager toolbar

The options for managing and maintaining repositories are accessed from the toolbar.

Tool Button	Tool Button Name	For more details see...
	Edit repository settings	Editing repository settings or creating a new repository
	Create a new repository	Editing repository settings or creating a new repository
	Copy a repository	Copying an existing repository definition
	Delete selected repository	Deleting a repository
	Create and populate demonstration repository	Importing a demonstration repository
	Import repository	Import/Export a repository
	Export repository	Import/Export a repository
	Repository Maintenance	Repository maintenance
	Repository Inifile	The repository .ini file
	Start License Dialog	ERP/CRM Integrator Licensing

Editing repository settings or creating a new repository

Clicking the 'Edit Repository Settings' or 'Create New Repository' button displays a series of forms for configuring the ERP/CRM Integrator repository and the connection to the 'source' system. See the ERP/CRM Integrator 'Getting Started Guide' Chapter on Installation for details on how to complete the required information.

Copying an existing repository definition

Clicking the 'Copy a repository' button will copy the currently selected repository definition and automatically create a new set of definitions with 'Copy of' in front of the name.

Deleting a repository

Clicking the 'Delete selected repository' button will remove the entry from the available list of repositories. Please note that this only removes the entry from the list. The ERP/CRM Integrator repository database and its contents will still exist.

Import/export a repository

The contents of a ERP/CRM Integrator repository can be moved from one instance of ERP/CRM Integrator to another using the repository import/export feature.

Import Repository

Clicking this button will display a form for selecting the import/export file. This is in the form of a 'zip' file and must have been produced from the ERP/CRM Integrator Repository export process (see 'Export Repository' below). Locate the file and select it to begin the import process. Importing a repository will overwrite the previous contents of that repository.

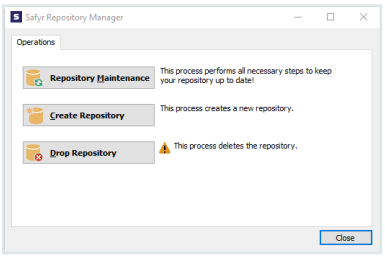
> **Note** Do not unzip the repository import file. ERP/CRM Integrator reads the file in its zipped format.

Export Repository

Clicking this button will display a form for specifying the location of the export file. Enter an appropriate name and location and press the 'Save' button to proceed with the export process.

Repository maintenance

Clicking the Repository Maintenance button displays a form that controls the tasks involved in maintaining the structure of the tables in the ERP/CRM Integrator Repository.



The Repository Maintenance form deals with the Creation, Deletion and Modification of the tables and other RDBMS objects in a ERP/CRM Integrator repository. The process will appear automatically when configuring a new repository, or when upgrading from an older version of ERP/CRM Integrator.

There are three buttons on the form:

- Repository Maintenance: Click this button to check the structure of the ERP/CRM Integrator repository against the latest standard.This will typically be used when upgrading from an earlier ERP/CRM Integrator release.
- Create Repository: Click this button to create the tables, views and triggers that form the structure of the ERP/CRM Integrator repository.
- Drop Repository:Click this button to drop all the tables, views and triggers in an existing ERP/CRM Integrator repository.Please note that this will delete the entire contents of the repository!

In each case, ERP/CRM Integrator executes a set of SQL scripts to perform the required database tasks.

The repository .ini file

ERP/CRM Integrator uses an .ini file to record details of each Repository created.In addition to this, a Microsoft Excel file is used to store a set of options used by ERP/CRM Integrator.Appendix B of the ERP/CRM Integrator 'Getting Started Guide' gives details on the structure and purpose of this Excel file.

The Repository Ini file button on the Repository Manager allows the location and name of the .ini file to be specified. By default the file is called safyr.ini and is located in \Users\<user name>\Appdata\Roaming\Silwood\Safyr7 for Windows 10. On clicking the button, a form is displayed which allows you to specify the name and location of the file. The SafyrSettings.xlsx file can also be located in the same folder as the .ini file.

ERP/CRM Integrator Licensing

The licensing screen shows details of any existing product license, and enables the user to apply for a product license. The actual options shown will vary depending on how the product was purchased.

Importing a Demonstration Repository

Your ERP/CRM Integrator product vendor may have provided one or more demonstration repositories to enable you to become familiar with the features of ERP/CRM Integrator.These repositories are provided in the form of a SQLite database.Using this Import feature, ERP/CRM Integrator will download the repository from the URL provided by your vendor and make the necessary setting for browsing and using the metadata.

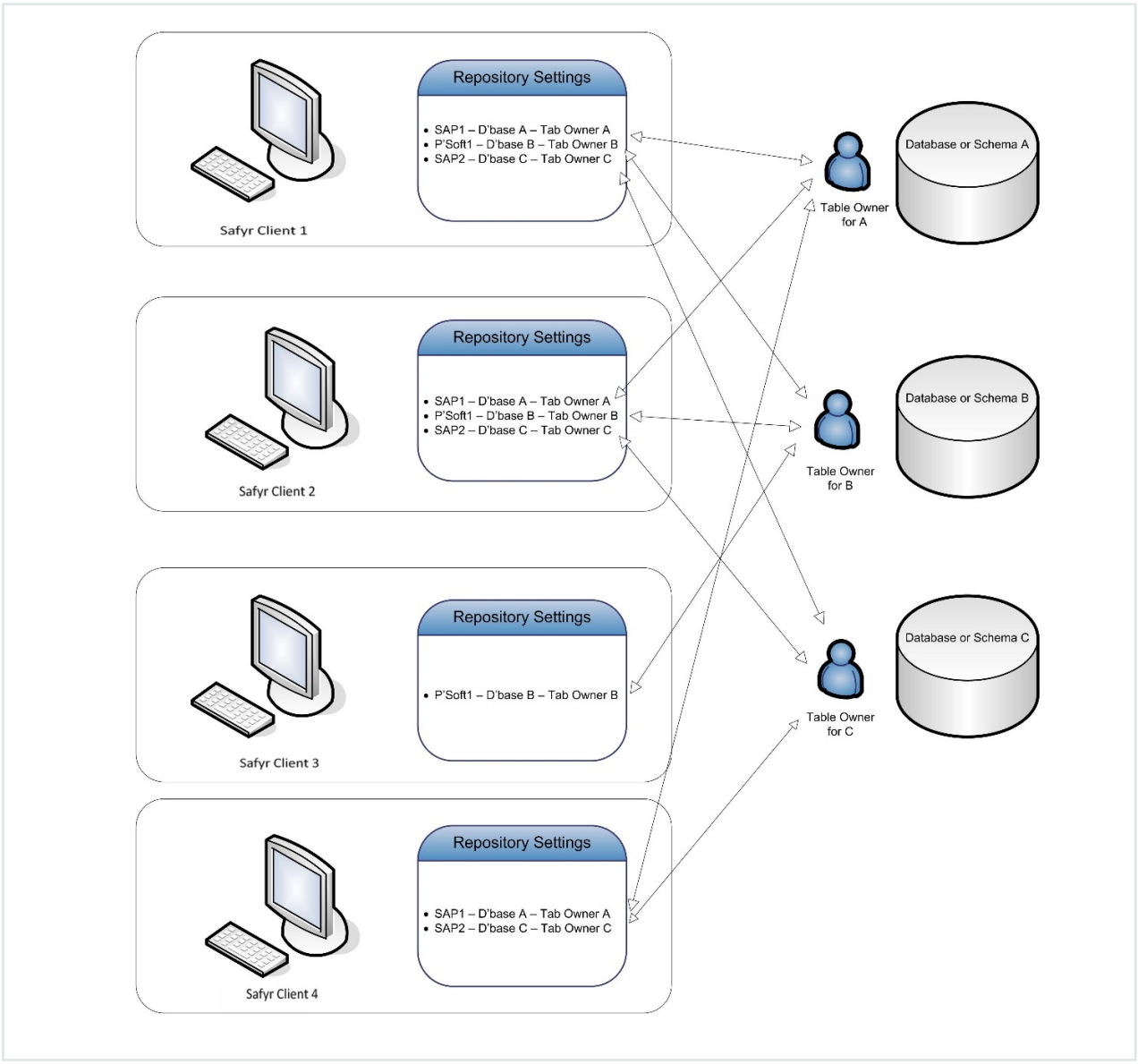
Managing Multiple Repositories

Most ERP/CRM Integrator customers will use the product to extract and store multiple sets of metadata from their chosen ERP environment(s).This section describes how to achieve this.

ERP/CRM Integrator needs a separate database or schema for each set of metadata to be stored. Each database will require a database user to be specified and this user must be the Table Owner for the database.

Each and every ERP/CRM Integrator user wishing to share the metadata in a ERP/CRM Integrator repository must specify the same database (or schema) and database user when defining a new ERP/CRM Integrator repository within their local ERP/CRM Integrator environment.

The following example shows a typical scenario; 4 ERP/CRM Integrator users wanting to connect to a mixture of SAP and PeopleSoft systems.There are 3 databases (or schemas).Database A stores metadata from a SAP system, Database B metadata from a PeopleSoft system and Database C from another SAP system.



ERP/CRM Integrator Client 1 has 3 Repositories defined:

- SAP1 pointing to Database A using Table Owner A as the database user
- PSoft1 pointing to Database B using Table Owner B as the database user
- SAP2 pointing to Database C using Table Owner C as the database user

ERP/CRM Integrator Client 2 has the same 3 Repositories defined

ERP/CRM Integrator Client 3 is only interested in the PeopleSoft system:

- PSoft1 pointing to Database B using Table Owner B as the database user

ERP/CRM Integrator Client 4 is only interested in the SAP systems:

- SAP1 pointing to Database A using Table Owner A as the database user
- SAP2 pointing to Database C using Table Owner C as the database user

Chapter 3

Browsing the metadata in ERP/CRM Integrator

A detailed description of the features for browsing the extracted metadata

ERP/CRM Integrator's main purpose it to make the discovery and scoping of the extracted application metadata easy.This chapter describes the various features for exploration in detail.

The ERP/CRM Integrator workspace

When the ERP/CRM Integrator application is started, a list of available Repositories is displayed and after selecting the appropriate one, the ERP/CRM Integrator toolbar and menu options provide the means to explore the metadata. The following sections describe the characteristics of the ERP/CRM Integrator workspace.

Elements of the ERP/CRM Integrator workspace

At the top of the ERP/CRM Integrator window is the Menu system and the Toolbar. The options available from these are described in the sections below.

In the middle of the form are the Navigation tiles. These represent the most common ERP/CRM Integrator tasks and are designed to guide new or infrequent ERP/CRM Integrator users how to start accessing the products features. The Navigation feature is described in Chapter 3 of the ERP/CRM Integrator Getting Started Guide. However, a summary of the features provided is also given in this chapter for convenience. See 'ERP/CRM Integrator Navigation Tiles' below for more details.

At the bottom of the window is the status bar.

The status bar is divided into 4 areas which are (from left to right) as follows:

- Micro Help – displays a short description as the mouse is positioned over menu items and buttons
- Repository Identifier – shows the name of the currently selected ERP/CRM Integrator repository
- Repository Type – identifies the type of the ERP/CRM Integrator repository (e.g. SAP)
- Selected Language – shows the language code that is being used for 'descriptive' fields like field names and table names.

The ERP/CRM Integrator menus

The ERP/CRM Integrator menu options are summarized in the following table. See the referenced section to find out more on each menu option.

Menu	Menu Item	For more details see...
File	Repository Manager	The Repository Manager chapter
	ERP Extract	ERP/CRM Integrator Getting Started Guide : Extracting Metadata
	Export Data Model as...	Chapter: Exporting metadata from ERP/CRM Integrator
	Exit	
Edit	Subject Areas	'Subject Areas' in this chapter
View	Model Overview	'The Model Overview' in this chapter
	Application Hierarchy	'The Application Hierarchy' in this chapter
	Table Details	'Viewing Table Details' in this chapter
	Table Relationships	'Viewing parent/child relationships' in this chapter
	View Details	'Using the Overview to browse views' in this chapter
	Source Data	'Drilling into data' in this chapter
	Statistics	'Viewing Model Statistics' in this chapter
Tools	Multi Object Search...	Multi-Object Search in this chapter
	ERP/CRM Integrator Options	'ERP/CRM Integrator Options' in this chapter
	Compare Subject Areas	Chapter: Comparing metadata
	Show ERP Extract Log...	'The ERP Extract Log' in this chapter
	Show Export Log...	'The Export Log' in this chapter
	Open ER Diagrammer	See Chapter: Exporting metadata from ERP/CRM Integrator for details of ER Diagrammer
	Licensing	'Licensing Information' in this chapter
Window	Cascade	

Menu	Menu Item	For more details see...
	Tile Horizontally	
	Tile Vertically	
	Minimize All	
	Close All	
Help	User Guide	
	About	

The ERP/CRM Integrator toolbar

The ERP/CRM Integrator Toolbar options are summarized in the following table. See the referenced section to find out more on each option.

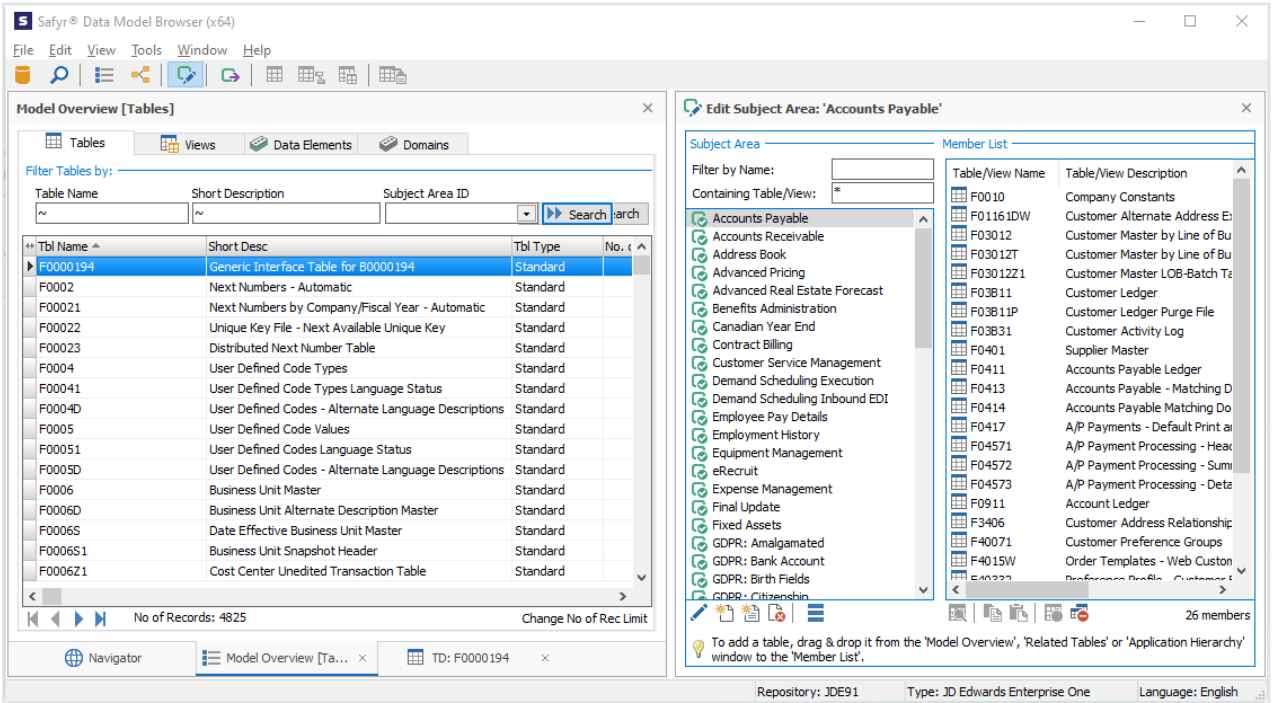
Tool Button	Tool Button Name	For more details see...
	Repository Manager	Chapter : The Repository Manager
	Multi-Object Search	'Multi-Object Search' in this chapter
	Show Model Overview	'The Model Overview' in this chapter
	Show Application Hierarchy	'The Application Hierarchy' in this chapter
	Edit Subject Areas	'Subject Areas' in this chapter
	Start Export Wizard	Chapter: Exporting metadata from ERP/CRM Integrator
	Show Table Details	'Viewing Table Details' below
	Show Table Relationships	'Viewing parent/child relationships' in this chapter

Tool Button	Tool Button Name	For more details see...
	Show View Details	'Using the Overview to browse views' in this chapter
	Drill into Source Data	'Drilling into data' in this chapter

ERP/CRM Integrator and Docked Forms

The ERP/CRM Integrator workspace uses a Docked forms approach. The Navigation Screen, Model Overview and Table/View Details forms are presented in the main work space, with a tab at the bottom of the screen for each window.

Other forms such as the Application Hierarchy and Subject Area Editor are docked to the side of the main work area. (See 'ERP/CRM Integrator options' below for details of how to control the position of the Docking Area).

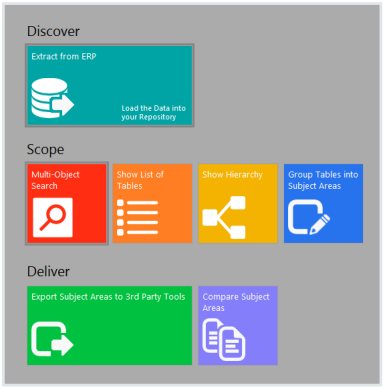


Forms in the main work area (those with a tab at the bottom), can be undocked by dragging the tab up into the main work space.

The Docked forms on the side of the ERP/CRM Integrator work area can only be undocked when the 'Enhanced Docking Mode' option is enabled (See 'ERP/CRM Integrator options' below for details of this option).

ERP/CRM Integrator Navigation Tiles

These are a set of clickable tiles that represent the most regularly used product features.



The workflow typically used in ERP/CRM Integrator is composed of three phases: 'Discover, Scope and Deliver'.

Discover

- This is the process of extracting the metadata from the 'source' ERP system

Scope

This area encompasses the main activities of searching and sub-setting tables using ERP/CRM Integrator. There are 4 tiles:

- Multi-Object Search – a facility for searching across a range of object types
- Show List of Tables – display the ERP/CRM Integrator Model Overview screen to allow querying on Tables
- Show Hierarchy – display the Application Hierarchy
- Group Tables by Subject Area – show the Subject Area editor for grouping tables

Deliver

This covers the capability for exporting Subject Areas. There are 2 tiles:

- Export Subject Areas to 3rd party Tools – export Subject Area contents to a range of formats
- Compare Subject Areas – compare contents of two Subject Areas to determine differences

All of the capabilities on the navigation screen are also available from the ERP/CRM Integrator menu and/or icon bar.

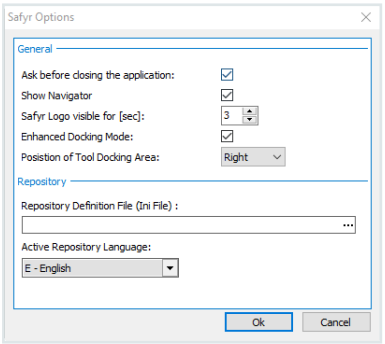
The following table shows where to find more details on these features.

Tile Category	Tile	For more details see...
Discover	Extract from ERP	The Getting Started Guide Chapter: Extracting Metadata
Scope	Multi-Object Search	Multi-Object Search in this chapter
	Show List of Tables	The Model Overview in this chapter
	Show Hierarchy	The Application Hierarchy in this chapter
	Group Tables into Subject Areas	Subject Areas in this chapter
Deliver	Export Subject Areas to 3rd Party Tools	Chapter: Exporting Metadata from ERP/CRM Integrator
	Compare Subject Areas	Chapter: Comparing metadata

ERP/CRM Integrator options

The ERP/CRM Integrator Options form is displayed by selecting 'ERP/CRM Integrator Options' from the 'Tools' menu. The available options are:

- **Ask before closing application** – When checked 'on', you will be asked to confirm that you wish to exit when closing ERP/CRM Integrator down. When not checked, ERP/CRM Integrator will close down without the confirmation form.
- **Show Navigator** – When checked 'on', the Navigation Tiles screen will be displayed when entering ERP/CRM Integrator
- **ERP/CRM Integrator Logo visible for [sec]** – The ERP/CRM Integrator logo is displayed at startup. Select the number of seconds that the logo is to be displayed for
- **Enhanced Docking Mode** – Gives greater flexibility in positioning of the ERP/CRM Integrator forms.
- **Position of Tool Docking Area** – Allows the location of docked forms to be determined. Possible values are 'Left' and 'Right'.
- **Repository Definition file** – Use this to specify the location of the ERP/CRM Integrator 'ini' file.
- **Repository Language** – Where the extraction of metadata has been performed in more than one language, this option allows the selection of the language for displaying language-dependent data such as attribute and table names.



Licensing Information

ERP/CRM Integrator needs an appropriate licensing key, not only to enable the product usage, but to determine which product features are enabled. ERP/CRM Integrator is distributed via a number of licensing systems. Please contact your ERP/CRM Integrator software provider for more details of licensing options.

Browsing the metadata

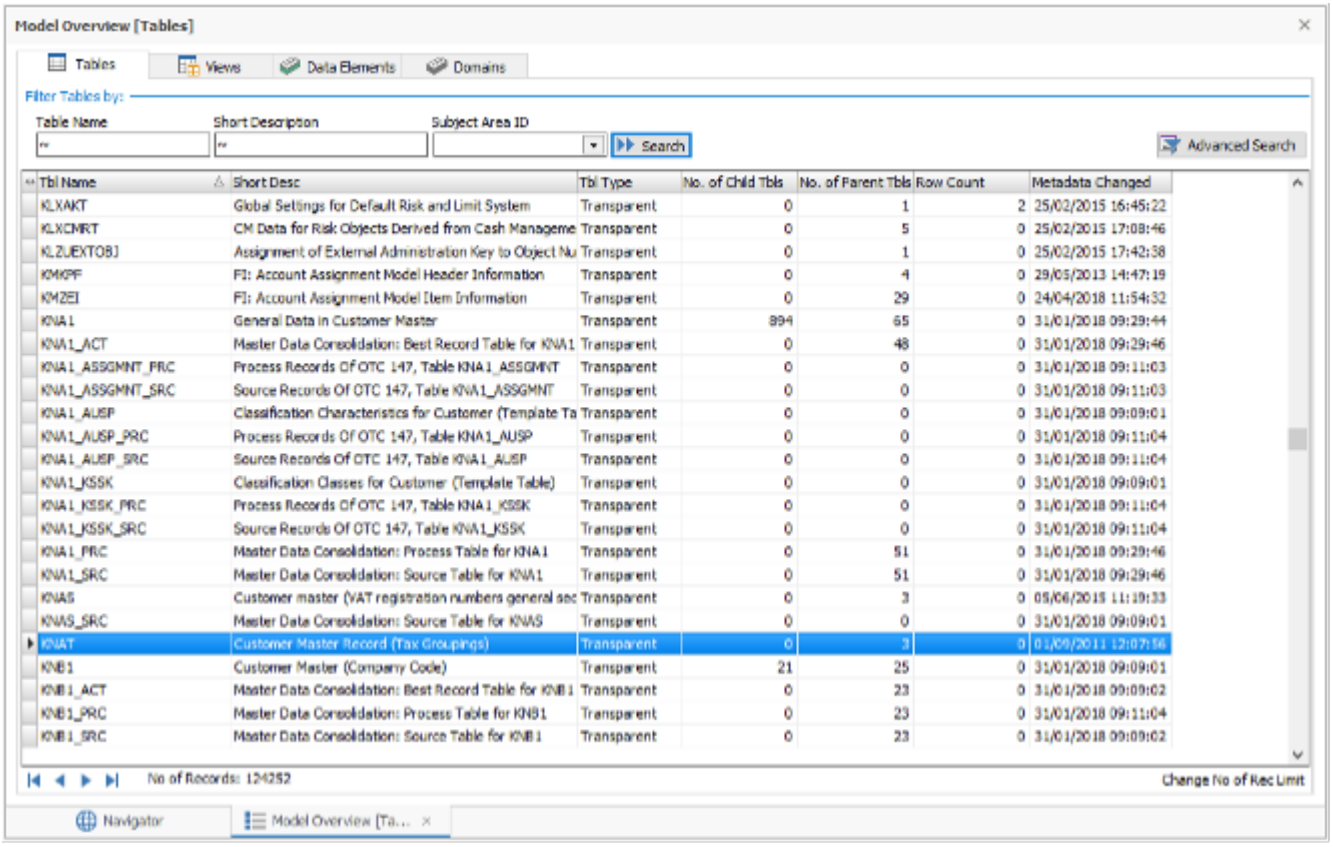
There are two main 'entry points' for Browsing the metadata:

- **The Model Overview** – this displays a list of tables, views or domains in the repository. You can use search facilities to refine the list. For more details see 'The Model Overview' below.
- **The Application Hierarchy** – this shows the tables and views organised by Application Module. For more details see 'The Application Hierarchy' later in this chapter.

The Model Overview

The Model Overview form is displayed by clicking on the ERP/CRM Integrator toolbar or selecting 'Model Overview' from the 'View' menu, or by clicking the 'Show List of Tables' tile on the Navigation screen.

Clicking the Search button will return a list of all the tables in the ERP/CRM Integrator repository.



The Model Overview form

For each table, the following fields are displayed:

- **Table Name**: The 'physical' table name.
- **Short Desc**: The 'logical' name.
- **Tbl Type**: Possible values are Custom, Standard, TRANSP (Transparent), POOL or CLUSTER. TRANSP, POOL and CLUSTER are only applicable to SAP systems. Custom is only applicable to Salesforce systems.
- **No. of Child Tbls**: The number of related 'child' tables.
- **No. of Parent Tbls**: The number of related 'parent' tables.
- **Row Count**: The number of rows in the table. See 'How ERP/CRM Integrator determines the Row Count' below
- **Metadata Changed**: The data and time that the Table was created/updated is shown for SAP, Siebel, Oracle EBS and PeopleSoft systems. For Salesforce systems, this is only available for custom tables and attributes, therefore the Metadata Changed is set where a custom Table and/or attribute is defined, and the latest date/time of any contained field is used as the value.

Below the grid are a set of controls for moving through the result set.

From left to right these will:

- Move to the first record in the result set
- Move to the previous record in the result set
- Move to the next record in the result set
- Move to the last record in the result set

The total number of rows in the result set is displayed next to 'No of Records'. By default, there is a limit to the number of records that are retrieved of 2,500. This limit can be changed by clicking the 'Change No of Rec Limit'. Setting this to zero means there is no limit to the number of returned records.

If the actual number of rows available is higher than the Record Limit set, the words 'Limit Exceeded!' are displayed beside the 'No of Records'.

How ERP/CRM Integrator determines the Row Count

The ERP/CRM Integrator Row Count shows the number of rows in each table. The row count is obtained from the database statistics and can only be evaluated correctly if:

- The database user specified in the connection properties to the source ERP system (see Chapter: Overview of ERP/CRM Integrator Workflow in the Getting Started Guide for details of connecting to the source ERP) has access to the DBMS statistics

  > **Note** For a SAP system, access to statistics is via ABAP)

- The database statistics are processed (normally such a process is scheduled on the DBMS system)

ERP/CRM Integrator only provides the row count feature for ERPS based on Oracle, SQL Server, DB2 and HANA, and for Sybase ASE where the ERP system is SAP. Other platforms will result in the Row Count being set to '-1'.

If the statistics are unavailable or the Table does not exist in the physical database, the Row Count for the table will be set to '-1'.

> **Note** ERP/CRM Integrator does not currently extract Row Counts for a Microsoft Dynamics AX 2012 system.

For a SAP system, the meaning of the Row Count will depend on the SAP table Type.

- **Transparent Tables**: The Row Count will indicate the actual number of Rows in the table
- **Pool Tables**: The Row Count will show only that there is data or not in the table. Pool tables with data will have the Row Count set to 1. Tables without data will have the Row Count set to zero.
- **Cluster Tables**: The Row Count will show the actual number of rows in the 'physical' table that stores the Cluster table. Therefore, each Cluster table that resides in a given physical table will show the same number of rows.

Special Considerations for SAP and Siebel Systems

The row count capability of ERP/CRM Integrator takes no account of multiple systems that may exist in the same 'source' ERP system. SAP (via the MANDT – Client approach) and Siebel (via the Repository approach) permit several parallel systems to be stored within the same database. For example, within one Siebel system there might be a 'Standard' repository and a 'Custom' repository. Because the row count capability of ERP/CRM Integrator is based upon the physical row count in the system catalog, the resulting row count for a given table will reflect all rows, regardless of which of the rows belongs to which Repository.

Opening additional Model Overview windows

Multiple 'Model Overview' forms can be opened. Each window functions separately allowing a number of different object lists to be displayed concurrently.

Seeing View, Data Element and Domain information

The Model Overview can be switched between Table, View, Data Element and Domain display using the tabs above the form. See 'Using the Overview to browse Views', 'Using the Overview to browse Data Elements' and 'Using the Overview to browse Domains' later in this chapter for more details.

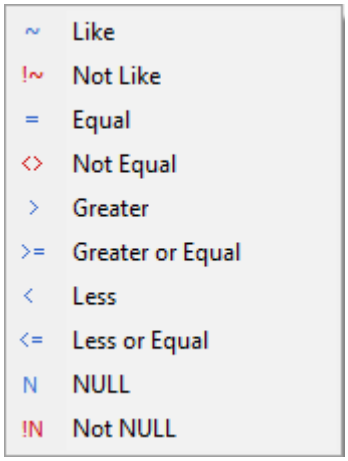
Selecting tables in the Model Overview

The three fields above the table list can be used for selecting tables from the full list.

The Start Select button uses the entered selection criteria to search for a matching table set.

Each of the three fields is preceded by a ~ button which allows the type of search criteria to be specified.

Clicking this button reveals a set of searching options.



The meaning of each of these buttons is described in the table below.

Button	What Does it Do?
~	Wild Card Search - find rows starting with or containing the specified string
!~	Negated Wild Card Search - find all rows not containing the specified string
=	Exact Match - find rows exactly matching the specified string
<>	Negated Match - any rows exactly matching the specified string are excluded
>	Greater than - finds all rows greater than the specified string in the collating sequence
>=	Greater than or equal to - find all rows greater than or equal to the specified string in the collating sequence
<	Less than - finds all rows less than the specified string in the collating sequence
<=	Less than or equal to - finds all rows less than or equal to the specified string in the collating sequence
N	Null search - finds all rows containing Null value
!N	Not Null search - finds all rows containing a Not Null value

ERP/CRM Integrator search types

The default search type is ~ - Wild Card Search. This will probably satisfy most of the normal searching requirements.

The three search fields are: -

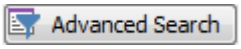
- **Table Name**: The physical name of the table
- **Short Description**: The descriptive name for the table
- **Subject Area ID**: The id of the Subject Area (see 'Subject Areas' later in this chapter for more details of subject areas)

To select tables

1. Enter the selection criteria for the desired tables
2. Click the 'Search' button.

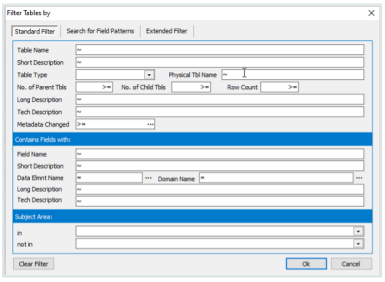
The set of tables satisfying the criteria will then be displayed.

Using Advanced Search

The selection criteria described in the previous section cover most of the day-to-to-day queries. The Advanced Search button 

displays a form allowing for more flexible search capabilities. This is particularly useful when searching for a given field occurrence.

The form consists of three tabs: 'Standard Filter', 'Search for Field Patterns' and 'Extended Filter'.



The Standard Sections tab includes a range of search fields, including Field Name, Short Description and Long Description. These are described below.

The search options are grouped into 3 different areas:

- Table related search criteria:
  - **Table Name**: Enter a Table Name or partial Table Name
  - **Short Description**: Enter a Short Description or partial Short Description

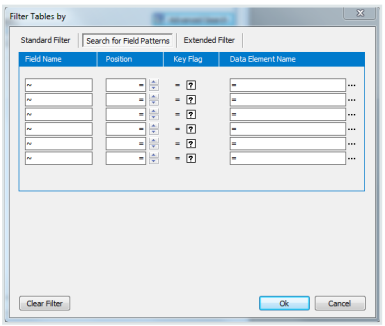
    - **Table Type**: use the drop down list to choose Transparent, SAP Pool or SAP Cluster. The latter two are only relevant to an SAP system
    - **Physical Table Name**: Enter a Table Name or partial Table Name. This is the name of the actual Table in the underlying ERP database
    - **No of Parent Tables**: Enter the desired number of 'Parent' tables
    - **No of Child Tables**: Enter the desired number of 'Child' tables
    - **Row Count**: Enter the desired number of rows in the table
    - **Long Description**: Enter a string to be located within the Table Long Description
    - **Metadata Changed**: Select a date/time
- Field (or Column) related search criteria:
    - **Field Name**: Enter a Field Name or partial Field Name
    - **Short Description**: Enter a Short Description or partial Short Description
    - **Data Element Name**: Enter a Data Element Name or Partial Name
    - **Domain Name**: Enter a Domain Name or Partial Name
    - **Long Description**: Enter a string to be located within the Field Long Description

> **Note** In the case of a SAP system, the Long Descriptions are held at the Data Element level, not at the Field level, and so a search for a string within the Long Description will not return any results.

- Subject Area related search criteria:
    - **in**: Enter the Subject Area name containing the tables to be searched
    - **not in**: Enter the Subject Area name containing the tables not to be included in the search

Having entered the appropriate search conditions, click 'OK' to perform the actual search.

Clicking the 'Clear Filter' button will remove any search terms in any of the search screens.



The 'Search for Field Patterns' form allows for combinations of fields and field characteristics to be used as search criteria.

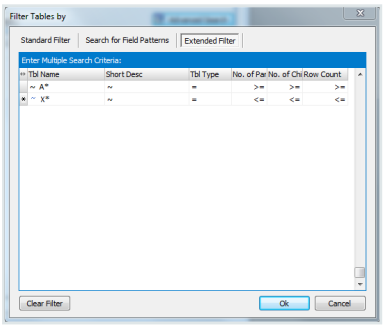
The available options are:

- **Field Name**: Enter a Field Name or Partial Field Name
- **Position**: Use the scroll bar to select the actual numeric position of the field in the table
- **Key Flag**: toggle between Key Field ('X'), Not Key Field ('empty') or Wild Card ('?')
- **Data Element Name**: Enter a Data Element Name or Partial Name

Having entered the appropriate search conditions, click 'OK' to perform the actual search.

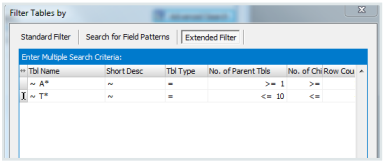
Clicking the 'Clear Filter' button will remove any search terms in any of the search screens.

The 'Extended Filter' form has features for entering multiple selection criteria in one query.



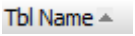
This form can then be used to enter search criteria, similar to those described for the 'Standard Filter' form. However, multiple search criteria can be entered by adding additional lines to the search. Lines are added by using the 'Down Arrow Key'.

The following example shows a query that looks for tables starting with an 'A' or a 'T' and having Parent relationships between 1 and 10 'child' tables.

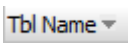


Sorting columns in data mode

The data can be sorted on any of the available columns by clicking on the field heading.

The current sort field is denoted by a sort 

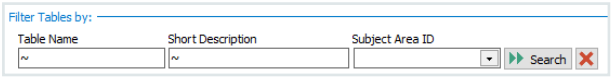
icon next to the name of the sorted column.

An inverted sort 

icon denotes a column sorted in descending order.

Clearing Search Criteria in the Model Overview

When search criteria have been entered, either in the Model Overview screen, or using the 'Advanced Search', a Clear Search Criteria button appears next to the 'Search' button. This indicates that there are search criteria active, and by clicking this button, all search criteria will be cleared. The button is only visible when search criteria are present.



Viewing table details

Full details of a given table can be displayed by double clicking on the row for that table in the Table list. This opens the Table Details window. Alternatively, Right Mouse Click on the highlighted table and select 'Table Details' from the pop-up menu.

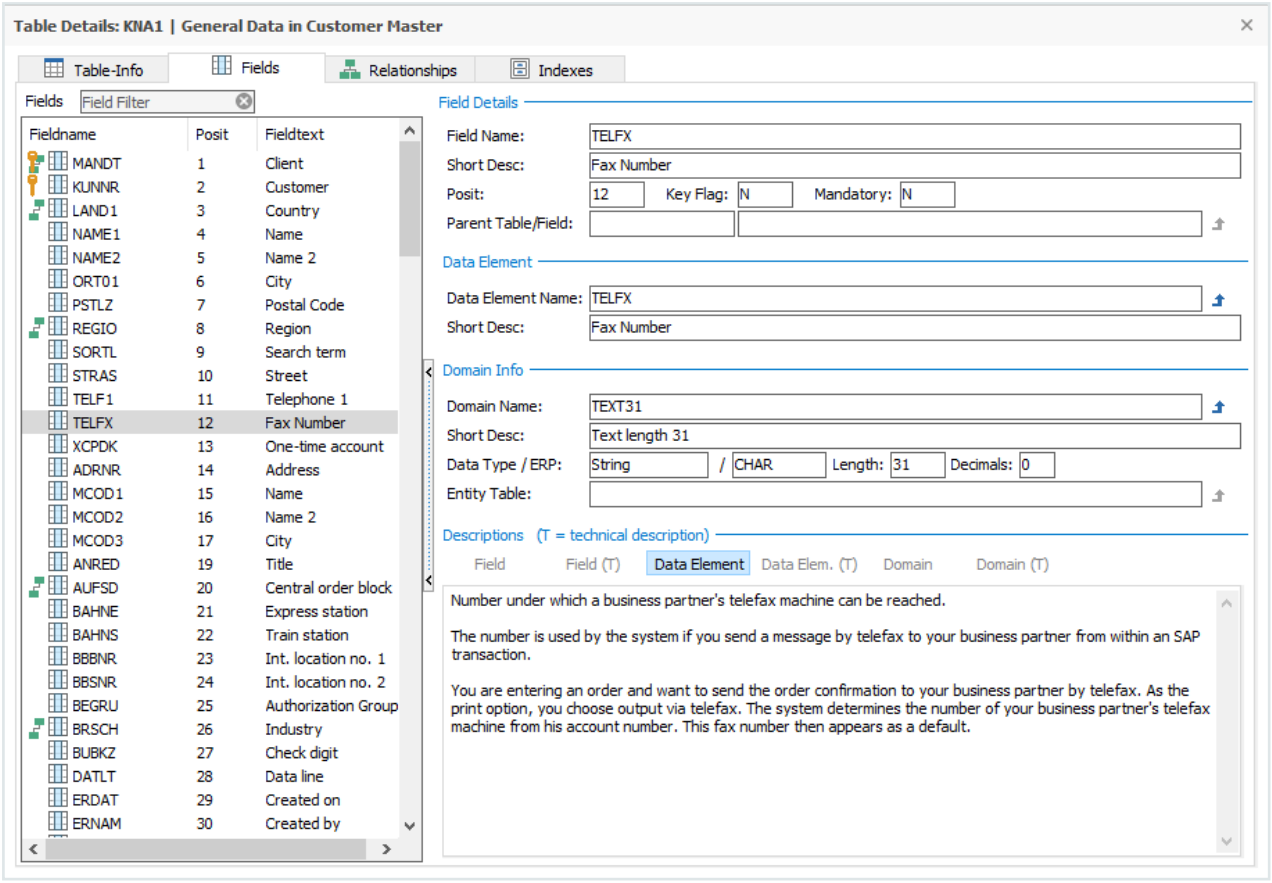
> **Note** It is possible to open a number of separate table details windows.

When the Table Details form is opened a list of fields is displayed for that table. Other table information can be displayed from this form using the Buttons on the left-hand side of the form.

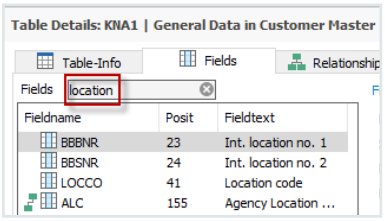
The default display format shows details of each field in the table. To the left of each field icon there may be an additional icon. This can be: -

- The Field is part of the Table's Primary Key
- The Field is part of the Primary Key and also a Foreign Key
- The Field is a Foreign Key field

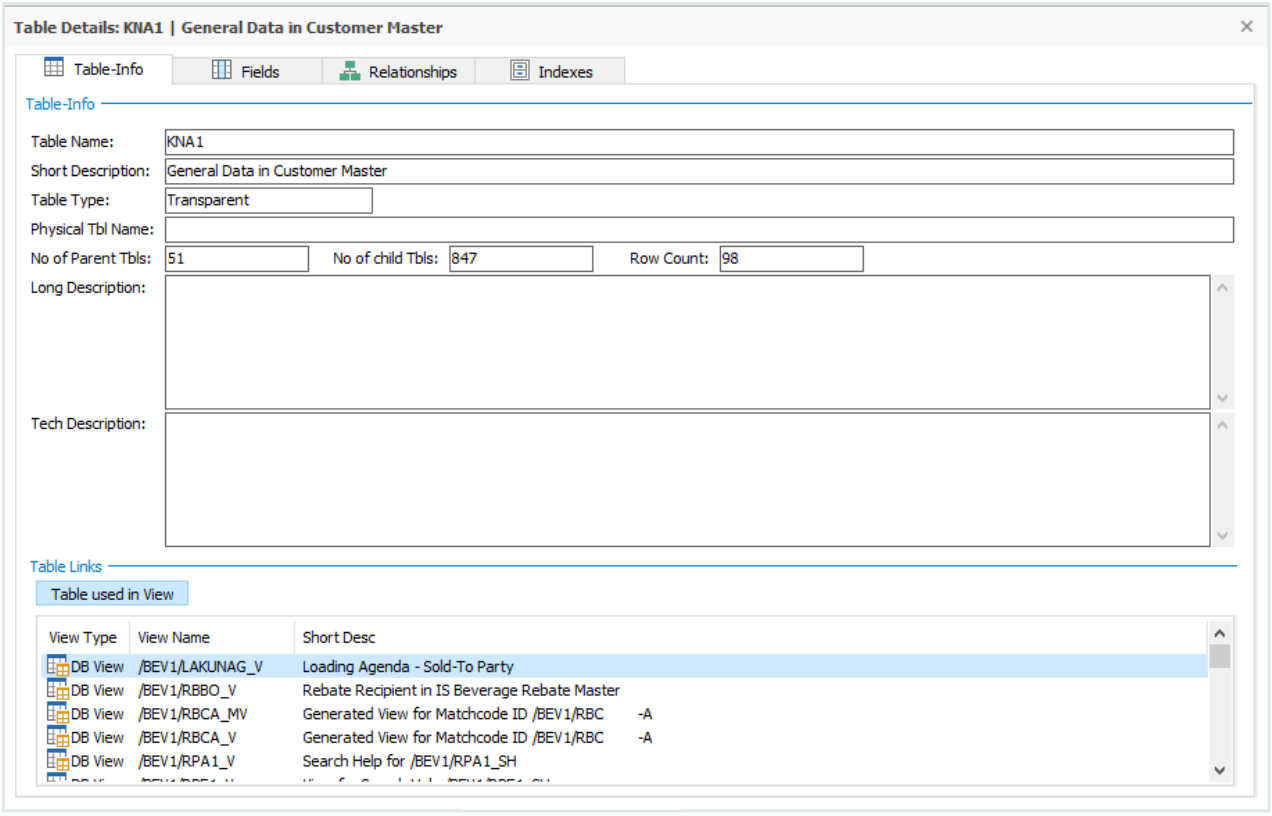
As each field is selected, further information about that field is shown in the tabbed display to the right. There are three levels of information about each field: The Field Details, the Data Element for that field and the Domain to which the Data Element belongs. The three levels can be displayed by clicking on the appropriate tab.



At the top of the Field list is a Field Filter option. This can be used to reduce the list of fields displayed by entering a search string. Any fields matching that search string will then be displayed. The Field Filter search operates on the Fieldname, Posit and Fieldtext attributes.



The Table Information tab  Table-Info will show details including the descriptive name of the Table and any Views based on the table.



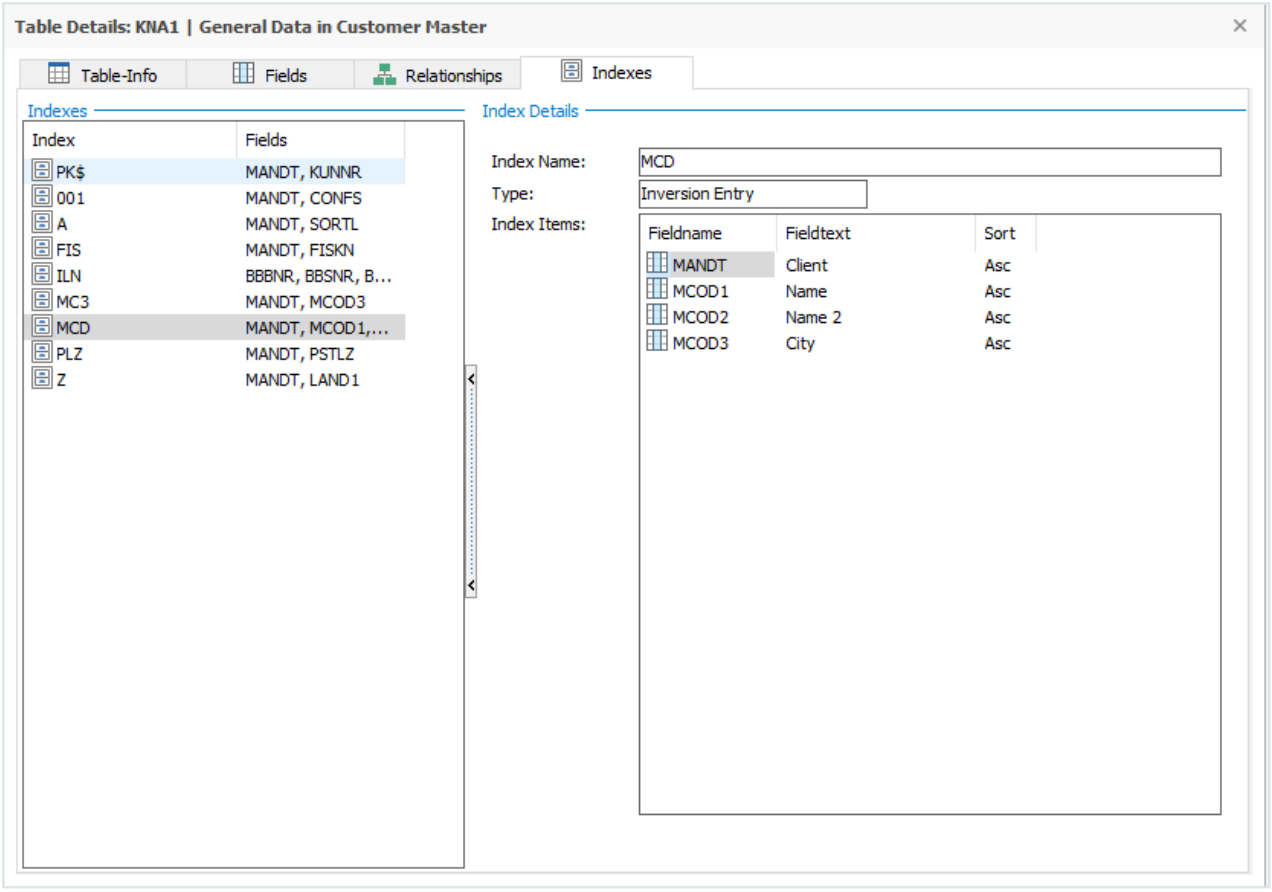
Details of a given view can be displayed by double-clicking the view name. This will display the View details form. See 'Showing the View fields' later in this chapter for more details.

The control gives the following options:

Menu	Usage or For more details see...
Add Table <name> to a New Subject Area/Subject Area <name>	Adds the Table to a new Subject Area, or the currently open Subject Area
Find Table in...	Locates the Table in the Application Hierarchy. See 'Finding a table in Application Hierarchy' below
Show Table Relationship form	The related 'parent' and 'child' tables form will be displayed. See 'Viewing parent/child relationships' in this chapter for details.

Index details

Clicking on the index tab Indexes displays a list of indexes for the currently selected table.

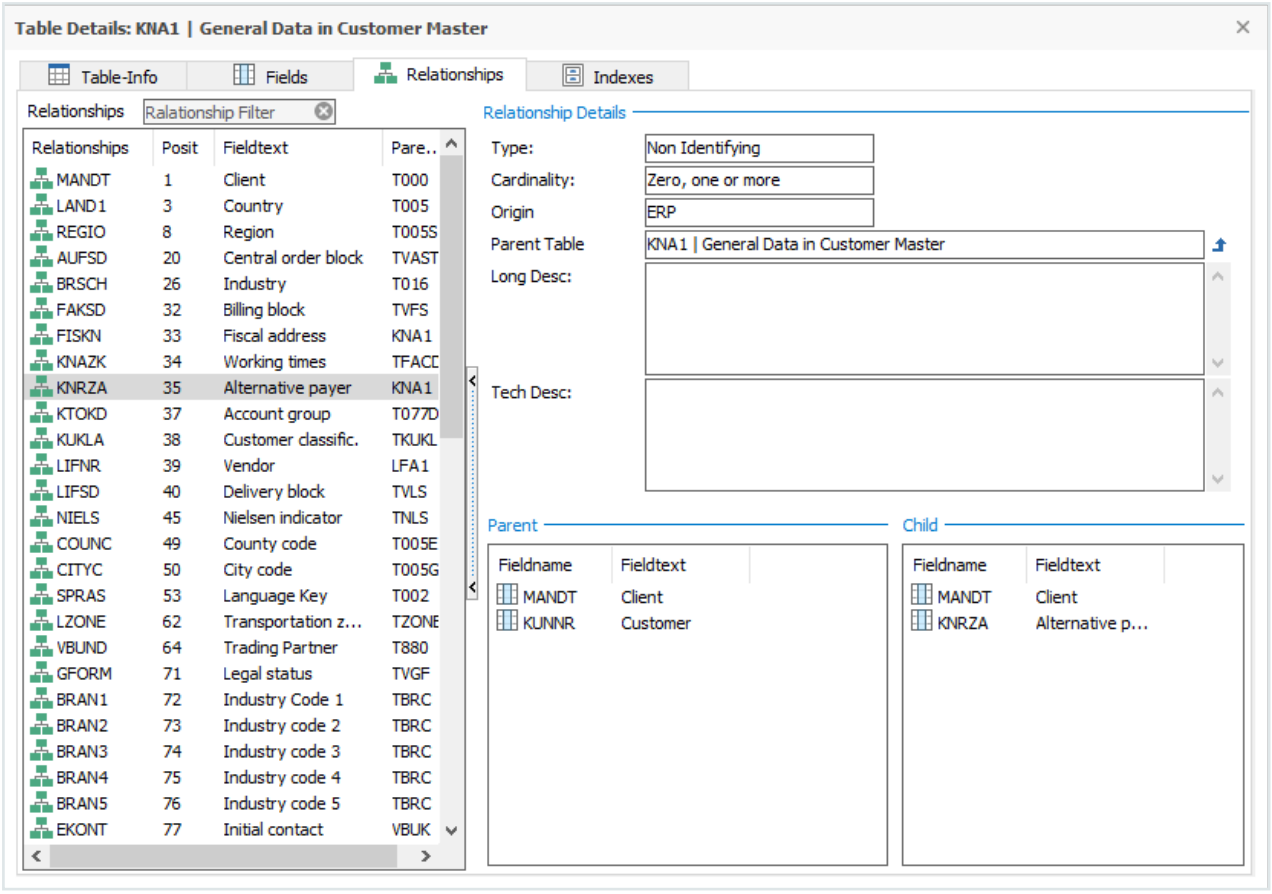


Clicking on an index in the list displays the field components of that index in the box to the right.

Relationship details

Clicking on the Relations tab Relationships reveals a list of all the relationships between the current table and any 'parent' tables.

> **Note** This will only find relationships where the current table in the Tables Details is a 'child'. To find both parent and child relationships see 'Viewing parent/child relationships' later in this chapter.



Clicking on a particular relationship will show the fields participating in the relationship at bottom right for both the 'child' and 'parent' table, along with more information about the relationship at top right.

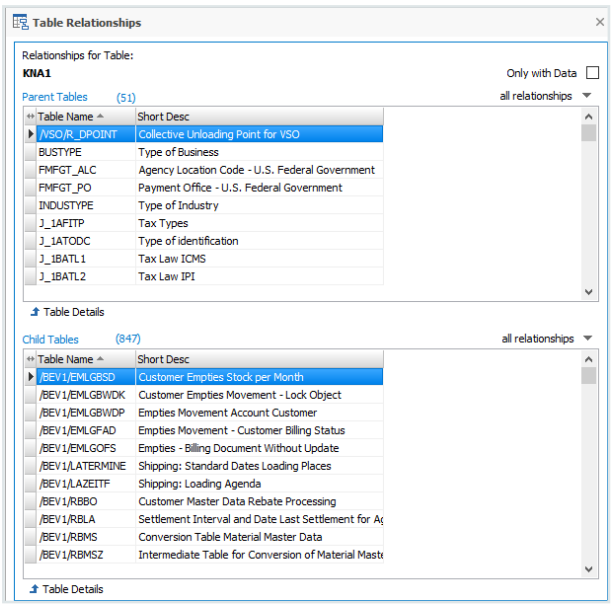
The 'Parent Table' field in the top right panel shows the Parent table for the selected relationship. Clicking on the icon to the right of this field can be used to display details of the 'parent' table in the relationship.

At the top of the Relationships list is a Relationship Filter option. This can be used to reduce the list of relationships displayed by entering a search string. Any relationships matching that search string will then be displayed. The Relationship Filter search operates on the Relationship Field, Posit, Fieldtext and Parent Table attributes.

Viewing parent/child relationships

From the Model Overview with a table selected, clicking on the tool from the toolbar, or selecting the 'Table Relationships' option from the View menu will display the Table

Relationships form.



This form is split into two sections: The top section shows a list of tables that have a ‘parent’ relationship to the currently selected table in the model overview. This means that each of the parent tables contributes a foreign key to that table. The bottom section shows a list of tables that have a ‘child’ relationship to the currently selected table in the model overview. This means that each of the child tables receives a foreign key from that table.

The total number of tables is shown in brackets at the top of each section.

The ‘only with data’ checkbox can be used to reduce the ‘parent’ and ‘child’ table lists to only those with a ‘Row Count’ greater than zero.

The list of ‘parent’ and ‘child’ tables displayed can also be refined using the drop-down lists for each section. The available choices are shown in the table below.

All relationships	All relationships are displayed
Identifying relationships	Only relationships where the migrated primary key is part of the receiving table’s primary key are displayed
Non-identifying mandatory relationships	Only relationships where the migrated primary key is not part of the receiving table’s primary key, and the parent is mandatory, are displayed
Non-identifying optional relationships	Only relationships where the migrated primary key is not part of the receiving table’s primary key, and the parent is optional, are displayed

Full details of any of the tables shown in the 'parent' or 'child' area can be displayed by double-clicking on the table. This uses the Table Details form to show the structure of the selected table (see 'Viewing table details' earlier in this chapter.)

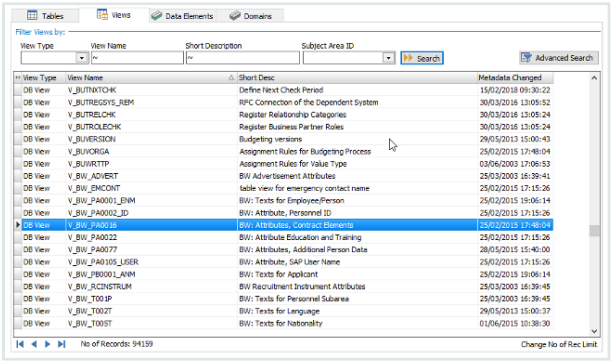
Using the Overview to browse Views

ERP/CRM Integrator can display details of application Views in a similar manner to the way it shows base tables in the Model Overview.

> **Note** There are no Views available in ERP/CRM Integrator for PeopleSoft Enterprise or Oracle E-Business Suite applications).

To display a list of views in the Model Overview, click on the 

tab and then click the Search button.



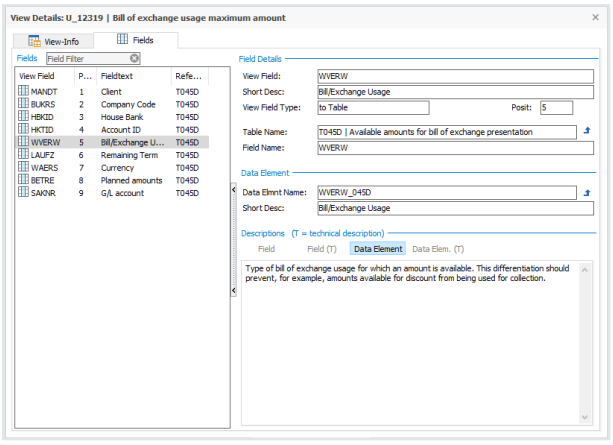
The View list is similar in usage and appearance to the base table list in the Model Overview.

Available fields in the View List include: -

- **View Type**: Some ERPs have more than one type – for most this will be a Database View
- **View Name**: The internal Name for the View
- **Short Desc.**: The Business Name for the View
- **Metadata Changed**: This field is currently only available for SAP systems. The data and time that the View was created/updated is shown

Showing the View fields

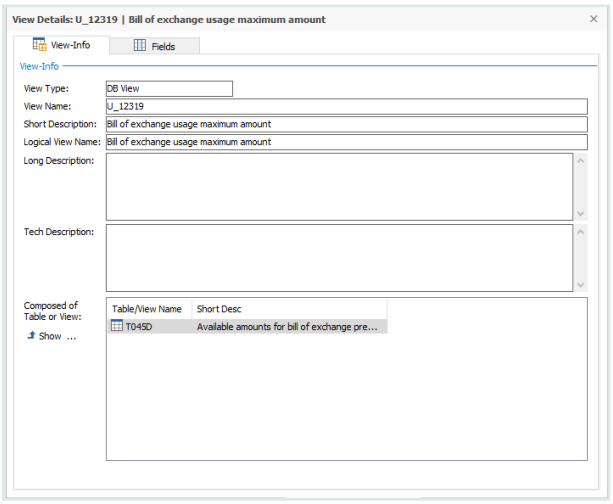
Double clicking on the view will show full details of the selected view.



This is very similar in content and purpose to the base table details form (see 'Viewing Table Details' earlier in this chapter).

View Elements Information

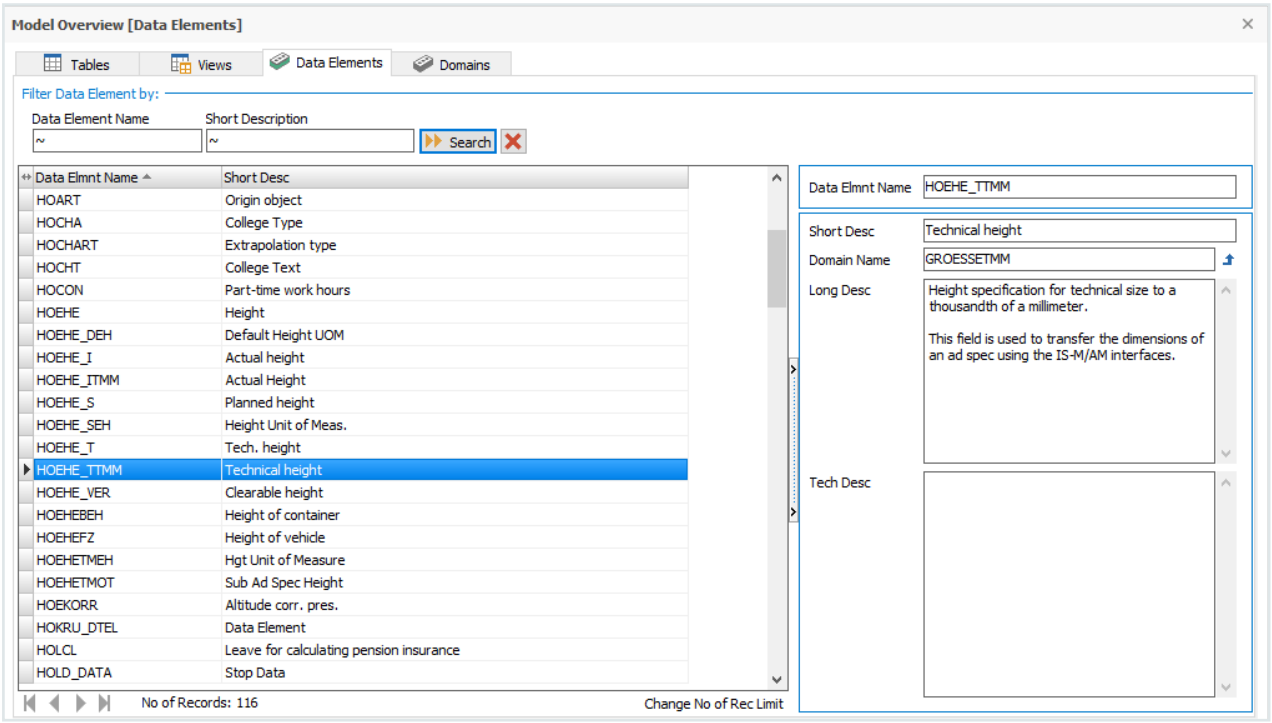
Clicking on the view info button View-Info reveals more details of the view and a list of the Base tables on which the view is based.



Double clicking on one of the 'component' Table Names will open the Table Details Window for that base table (see 'Viewing table details' earlier in this chapter).

Using the Overview to browse Data Elements

Clicking on the Data Elements tab on the Model Overview form displays a list of available Data Elements. Initially the list is empty; pressing the 'Search' button retrieves a full list of Data Elements.



Clicking on a Data Element in the list box on the left reveals full details of that Data Element on the right of the form.

The search facilities at the top of the form are similar in function to those for Base Tables and described in Selecting Tables in the Model Overview above.

Searching for tables using a Data Element

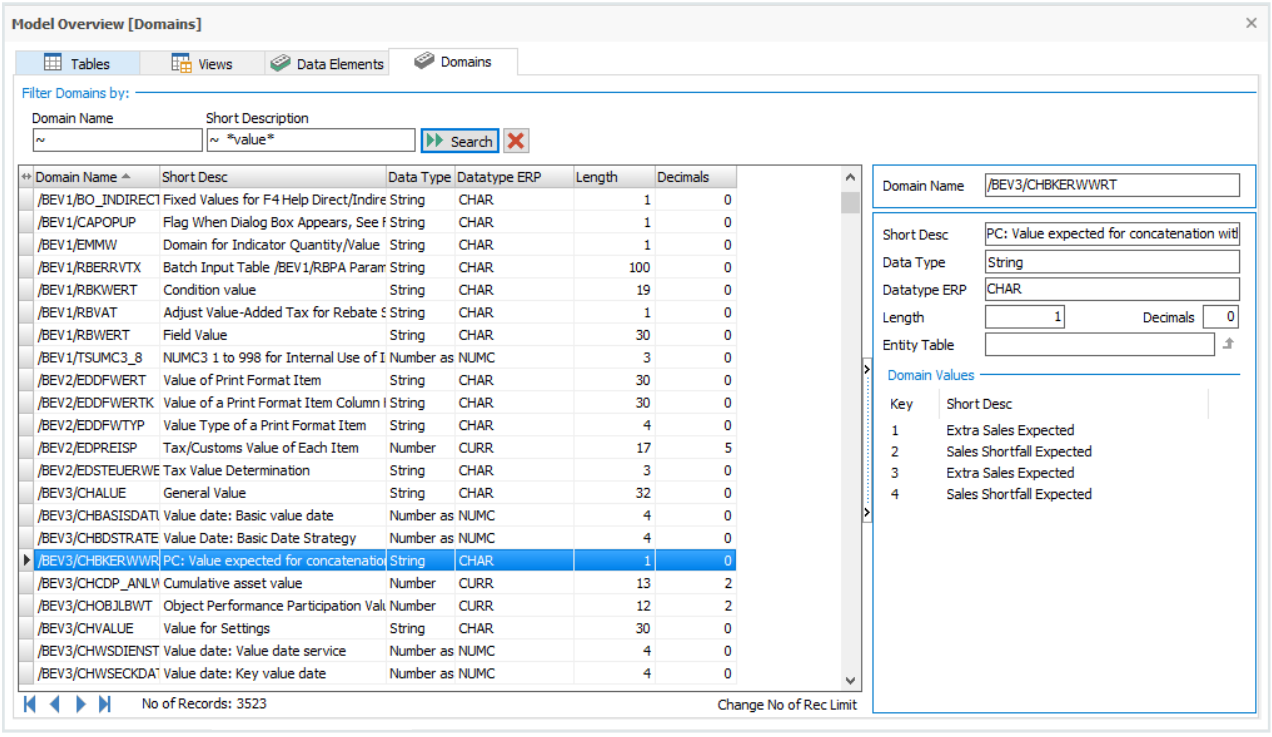
This feature finds all the tables using a specified Data Element.

From the 'Model Overview Data Element' form, right mouse clicking on a Data Element reveals a pop-up menu showing 'Find Tables using DataElement'. When selecting this, a search is initiated to find all Tables containing Fields that belong to the chosen Data Element.

> **Note** This feature sets the 'Data Element' field in the Search parameters (see 'Using Advanced Search' above) to the selected Data Element. It is advisable to clear this field after completing the search to prevent further searches from including this setting.

Using the Overview to browse Domains

Clicking on the Domains tab on the Model Overview form displays a list of available Domains. Initially the list is empty; pressing the 'Search' button retrieves a full list of Domains.



Clicking on a Domain in the list box on the left reveals full details of that domain on the right of the form.

The search facilities at the top of the form are similar in function to those for Base Tables and described in Selecting Tables in the Model Overview above.

Where a Domain has associated 'fixed' values, these are shown in the panel at bottom right as Domain values.

Searching for tables using a Domain

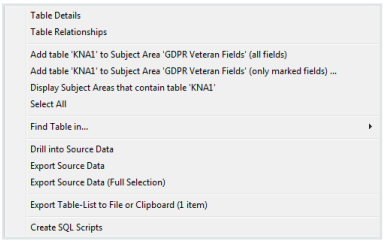
This feature finds all the tables using a specified Domain.

From the 'Model Overview Domains' form, Right Mouse Clicking on a Domain reveals a pop-up menu showing 'Find Tables using Domain'. When selecting this, a search is initiated to find all Tables containing Fields that belong to the chosen Domain type.

> **Note** This feature sets the 'Domain' field in the Search parameters (see 'Using Advanced Search' above) to the selected Domain. It is advisable to clear this field after completing the search to prevent further searches from including this setting.

The Model Overview context pop-up menu

Right Mouse Clicking on a row in the Model Overview will display the Model Overview context pop-up menu.



The available options are summarized in the following table:

Menu	Usage or For more details see...
Table Details	'Viewing Table Details' in this chapter
Table Relationships	'Viewing parent/child relationships' in this chapter
Add Table <name> to Subject Area <name> (all fields)	Adds the currently selected Table to the currently open Subject Area, with all the fields of each table
Add Table <name> to Subject Area <name> (only marked fields)	Adds the currently selected Table to the currently open Subject Area, with only the marked fields

Menu	Usage or For more details see...
Display Subject Areas that contain Table <name>	Opens the Subject Area editor and filters the view to those Subject Areas containing the table
Select All	Selects all the tables in the current list
Find Table in...	See 'Finding a table in Application Hierarchy' below
Drill into Source Data	'Drilling into data' in this chapter
Export Source Data	'Exporting data from a single table' in this chapter
Export Source Data (Full Selection)	'Export of a number of tables' in this chapter
Export table List...	'Exporting a list of tables' in this chapter
Create SQL Scripts	'Creating SQL scripts for table access' in this chapter

Finding a table in the Application Hierarchy

This option, when selected from the Model Overview context menu, will show a list of one or more available Hierarchies in which to search for the table or view. Once the desired Hierarchy has been selected, the Hierarchy is opened at the appropriate table or view. This allows the selected object to be seen in context to its position in the hierarchy.

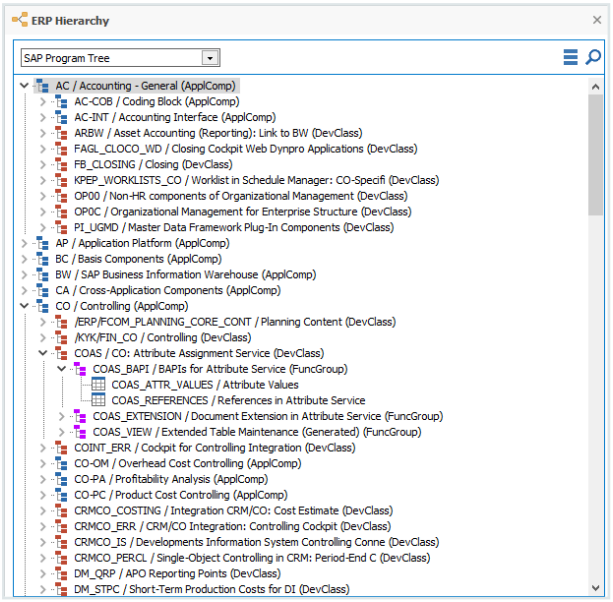
For more details of Application Hierarchy see 'The Application Hierarchy' in the next section.

The Application Hierarchy

The Application Hierarchy is an alternative way of looking at the contents of the ERP/CRM Integrator repository. The same set of Tables and/or Views seen in the Model Overview are organised in a 'tree' structure. Depending on the Enterprise Application being viewed, there may be more than one 'Tree' to choose between.

Click the  icon on the ERP/CRM Integrator toolbar, click 'Application Hierarchy' from the 'View' menu, or click on 'Show Hierarchy' on the ERP/CRM Integrator Navigation tiles to display the Application Hierarchy screen. If there is more than one type of Hierarchy available

for the currently selected Enterprise Application, the 'Tree' drop-down list box will show the possible choices.



The set of highest-level tree nodes correspond to the various modules within the Enterprise Application.

Various icons are used in the hierarchy as follows:

-  a module or a sub-module
-  a Table
-  a View
-  a Package (SAP only) or a Business Object (Siebel only)
-  a Function Group (SAP only)
-  a Program (SAP only) or a Screen (Siebel only)
-  a Transaction (SAP only) or a View (Siebel only)
-  a Business Component (Siebel only)
-  an OLTP Source (SAP only)
-  a SAP Function Module (SAP Only)

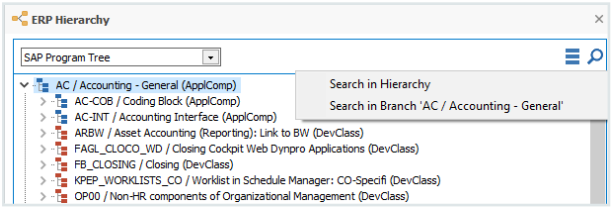
Available actions from the Hierarchy

There are two icons on the Application Hierarchy screen:

 Search for 'objects' in the Hierarchy

 Perform Actions on the currently selected node

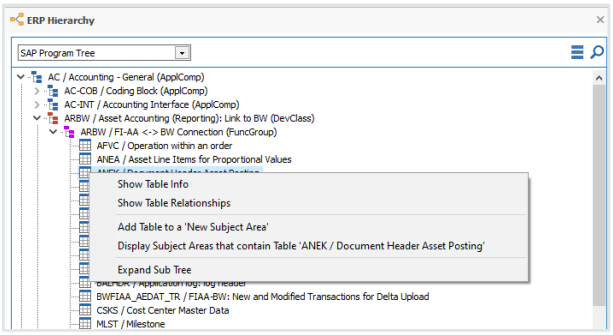
Clicking the 'Search' icon  presents a pop-up menu. The available options on this menu are context-dependent.



The available actions are:

- **Search in Hierarchy**: This displays a form for searching the entire hierarchy. See 'Searching for tables and views' and 'Searching Tree Nodes' below.
- **Search in Branch <branch name>**: This displays a form for searching within the currently selected hierarchy branch. See 'Searching for tables and views' and 'Searching Tree Nodes' below.

Clicking the 'Tools' icon  or Right Mouse Clicking in the Hierarchy presents a pop-up menu. The available options on this menu are context-dependent.



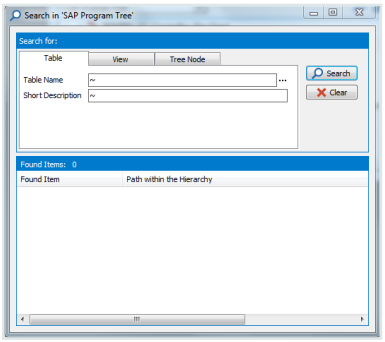
- **Show Table/View Info** - This option is only available if the current selected node is a table or a view. It shows the details of the selected table or view. See 'Viewing Table Details'

and 'Showing the View fields' earlier in this chapter for more details.

- **Show Table Relationships** – This option is only available if the current selected node is a table. The related 'parent' and 'child' tables form will be displayed. See 'Viewing parent/child relationships' earlier in this chapter for details.
- **Add all Tables and Views of <node> to subject area <subject area name>** - This option is only available if the 'Subject Area' form is open. (See 'Subject Areas' later in this chapter). All the tables and/or views belonging to the node are added to the current subject area.
- **Add all Tables of <node> to subject area <subject area name>** - This option is only available if the 'Subject Area' form is open. (See 'Subject Areas' later in this chapter). All the tables and/or views belonging to the node are added to the current subject area.
- **Add all Views of <node> to subject area <subject area name>** - This option is only available if the 'Subject Area' form is open. (See 'Subject Areas' later in this chapter). All the tables and/or views belonging to the node are added to the current subject area.
- **Export Branch <Node Name> to File...** - The currently selected Node, and its 'child' Nodes, will be exported to a text file format. After selecting this option, a File selection dialog is presented to specify the location of the text file.
- **Export Entire Hierarchy to File...** - The complete Hierarchy will be exported to a text file format. After selecting this option, a File selection dialog is presented to specify the location of the text file.
- **Expand Sub Tree** – opens the currently selected node.

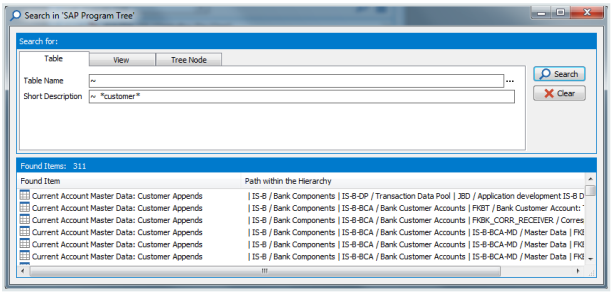
Searching for tables and views in the Application Hierarchy

Clicking the 'Search in Hierarchy' or 'Search in Branch' options in the Application Hierarchy pop-up menu displays the 'Search' form. This has three tabs; the first two are for searching for Tables and Views respectively. Both features work in the same way and the 'Search for a Table' option will be used here to describe the functionality.

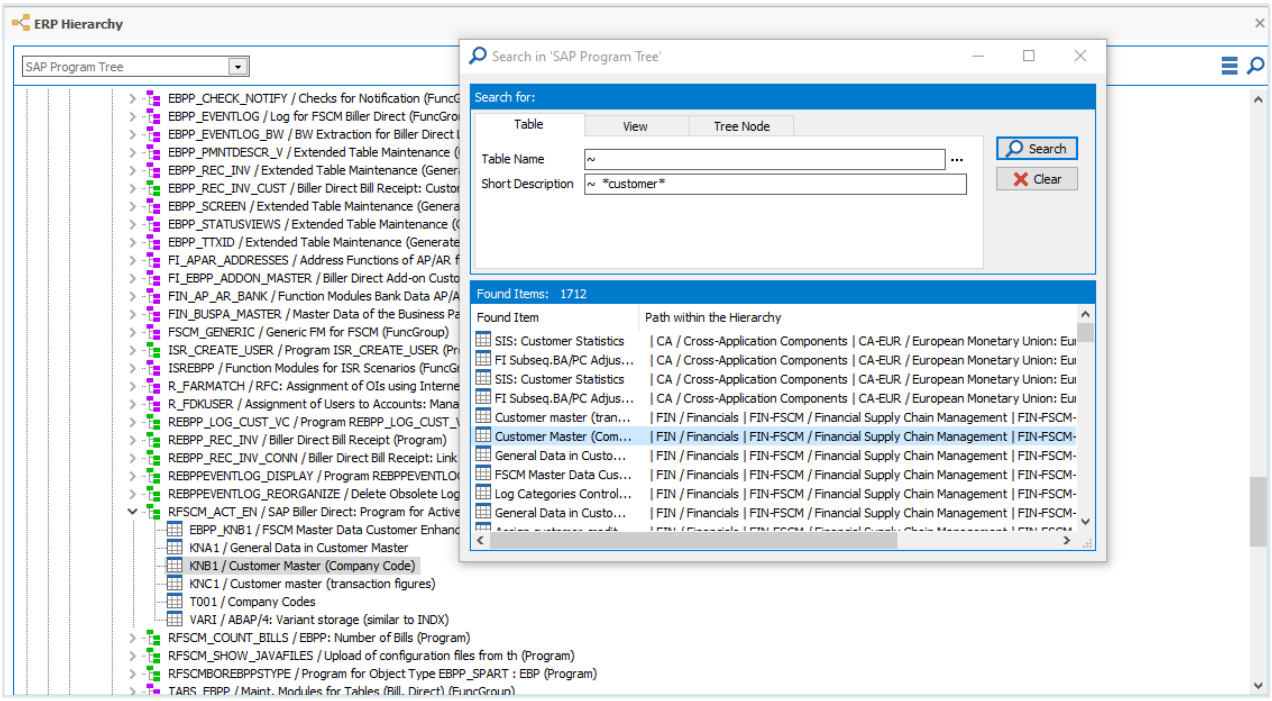


To find the location of a table in the application hierarchy, or currently selected node, enter the 'physical' Table Name or 'descriptive' Short Description string and click the 'Search' button. A list of matching tables will then be displayed.

Note that the Table Name and Text search fields have the same searching options as described above for the Model Overview (see 'Selecting Tables in the Model Overview').



Once the search is complete, double-clicking on an item in the search results will position the Application Hierarchy at that point.

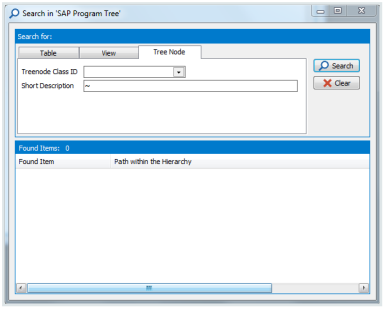


Searching Tree Nodes in the Application Hierarchy

Clicking the 'Search in Hierarchy' or 'Search in Branch' options in the Application Hierarchy pop-up menu displays the 'Search' form. This has three tabs, the first two are for searching for

Tables and Views, and the third tab for searching Tree Nodes.

Clicking the ‘for a Tree Node’ tab displays the ‘Search for a Tree Node’ form.



To find nodes in the application hierarchy, enter a search string in the ‘Short Description’, and optionally select a Tree node class from the drop-down list. The Tree Node classes available in the list are dependent on the Enterprise Application selected. Clicking the ‘Search’ button will display a list of matching nodes.

Having arrived at a list of items for the search performed, double clicking on an item in the list will locate that item in the Hierarchy.

What does the Application Hierarchy show for each ERP?

As mentioned above, the actual structure of the Application Hierarchy is dependent on which ERP is shown within ERP/CRM Integrator. This section describes the ERP-specific ‘objects’ available.

> **Note** There is currently no Application Hierarchy in ERP/CRM Integrator for a Salesforce or Microsoft Dynamics AX 2012 system.

Application Hierarchies for SAP

There are three Application Hierarchies created in ERP/CRM Integrator for SAP. These are:

- **SAP App/Comp/Package Tree**: This tree shows Table and Views grouped by Application Component and SAP Package. An important point to understand is that the location of a Table or View in a tree node is related to which component the table was

originally allocated when it was created. That is, a table will only belong to one node in the tree.

- **SAP Program Tree**: This tree shows Table and Views grouped by Application Component, Program, Function Group and/or Transaction. A SAP transaction is associated with a Program or Function Group. The Tables and Views are shown in the hierarchy associated with the Program or Function Group that uses them. So searching for a given Transaction will locate the Program/Function Group associated with that Transaction, and then the Table/Views used by that Program/Function Group are grouped below that Program/Function Group.
- **OLTP Source Tree Suite**: This tree shows the OLTP Sources that are called to populate SAP BW with data. Tables and Views are grouped by Application Component, Package, Function Group and Function Module. There are two types of OLTP Sources:
    - **OLTP Source (F*)**: These are Extractors Suite that use a SAP Function Module to perform the data access
    - **OLTP Source(V)**: These are Extractors that use a Table or View as the source for the data access

> **Note** For a SAP BW system, see Chapter: Special Product Features for SAP BW.

Application Hierarchies for Siebel

There are two Application Hierarchies created in ERP/CRM Integrator for Siebel. These are:

- **Siebel Application and Business Objects**: This tree shows Siebel Applications, and for each Application the Business Objects associated with that Application. Each Business Object is associated with a set of Business Components which form the next level of the hierarchy.
- **Siebel Application, Screens and Views**: This tree shows Siebel Applications at the top level, and for each Application the associated Screens, then Views and for each View the Business Components associated with that View.

Application Hierarchies for PeopleSoft Enterprise

PeopleSoft Application Tree: This tree shows PeopleSoft Applications, and for each Application the Tables associated with that Application. The Application is based upon the

Object Owner Id of each Table.

Application Hierarchies for PeopleSoft EnterpriseOne (JDEdwards)

JDEdwards System Code Tree: This tree shows JDEdwards tables grouped by System Code. The System Code comes from the JDEdwards Table definition.

Application Hierarchies for Oracle Enterprise Business Suite

EBS Application Tree: This tree shows Oracle EBS tables grouped by Application. The Application Id comes from the EBS Table definition.

Application Hierarchies for SuccessFactors

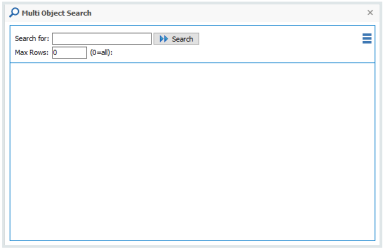
Application Tree: This tree shows SuccessFactors tables grouped by Application. The Application Id comes from the Tags associated with a Table in the OData XML file.

Multi-Object Search

The concept of the Multi-Object search is to allow the user to get an overview of what metadata is available for a given 'object'.

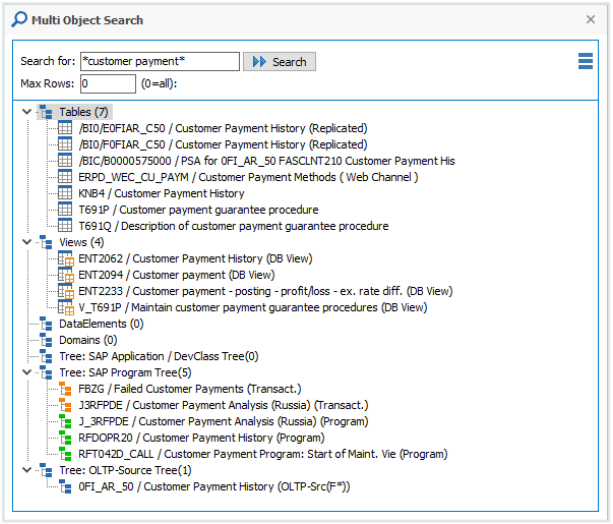
This is achieved by performing a text search across a set of 'object' types and returns a result list in a 'tree' format for further discovery and analysis.

The object types searched are Tables, Data Elements, Domains, Views and the Application Hierarchy.



The wild card of '*' used elsewhere in the product applies to the Multi-Object Search.

To start the search process, enter a search term in the 'Search for:' box. The number of results returned for each object type can be restricted by setting the 'Max Rows' box to a numeric value. Entering zero will return all results matching the search term.



The above search example shows the search result after clicking the 'Collapse Tree' option from the Multi-Object 'Tools' icon  .

Each node of the tree shows details of the objects returned.

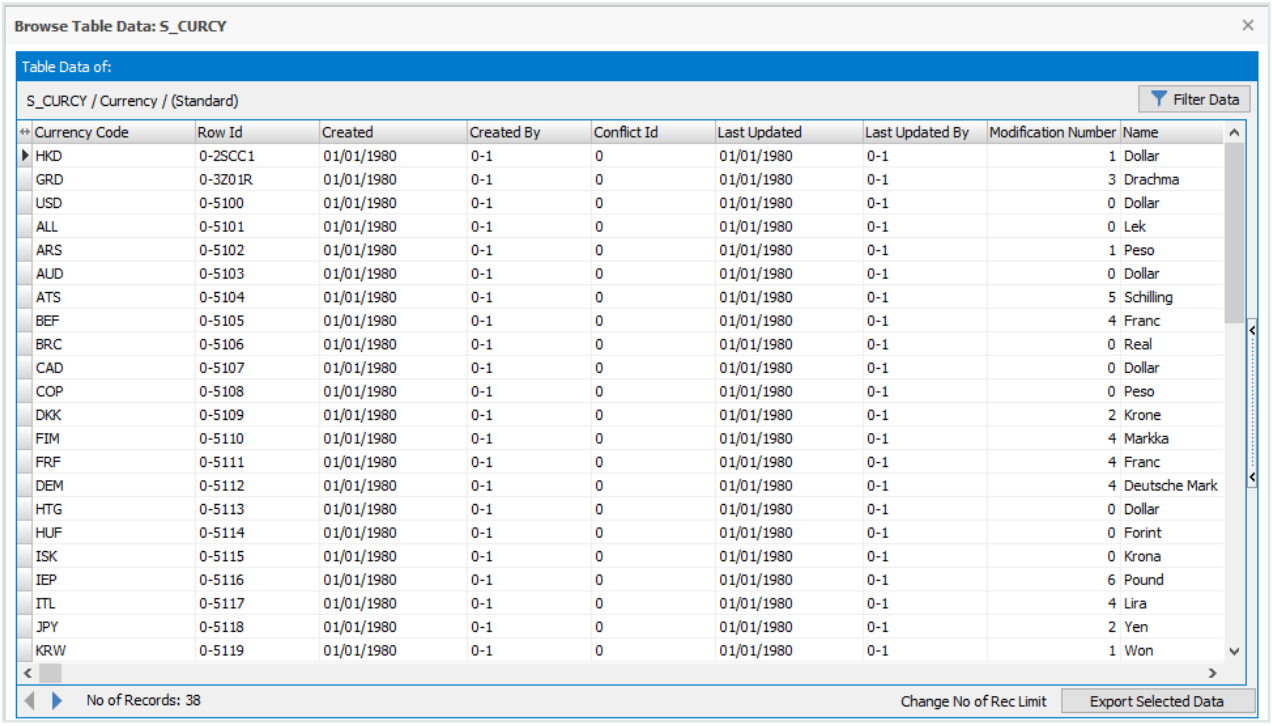
Further details of each object can be shown, either by double clicking on the object, or by Right Mouse Clicking and choosing 'Open Detailed Object Information'. The results of this action vary depending on the object type.

For a Table	The Table Details screen – see 'Viewing Table Details' earlier in this chapter
For a View	The View Details screen – see 'Showing the View Fields' earlier in this chapter
For a Data Element	The Data Element details in the Model Overview – see 'Using the Overview to Browse Data Elements' earlier in this chapter
For a Domain	The Domain details in the Model Overview – see 'Using the Overview to Browse Domains' earlier in this chapter
For a Hierarchy Object	The ERP-specific Hierarchy screen with the selected node opened – see 'The Application Hierarchy' earlier in this chapter.

Drilling into data

In addition to looking at the metadata for tables, ERP/CRM Integrator allows the actual data itself to be displayed, subject to the appropriate data access authorities.

This is achieved by selecting the table from the Model Overview, and then clicking  on the toolbar, or by Right Mouse Clicking on the table in the list and selecting 'Drill into Source Data'. ERP/CRM Integrator then performs a query to retrieve the data from the table.



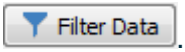
Currency Code	Row Id	Created	Created By	Conflict Id	Last Updated	Last Updated By	Modification Number	Name
HKD	0-2SCC1	01/01/1980	0-1	0	01/01/1980	0-1	1	Dollar
GRD	0-3Z01R	01/01/1980	0-1	0	01/01/1980	0-1	3	Drachma
USD	0-5100	01/01/1980	0-1	0	01/01/1980	0-1	0	Dollar
ALL	0-5101	01/01/1980	0-1	0	01/01/1980	0-1	0	Lek
ARS	0-5102	01/01/1980	0-1	0	01/01/1980	0-1	1	Peso
AUD	0-5103	01/01/1980	0-1	0	01/01/1980	0-1	0	Dollar
ATS	0-5104	01/01/1980	0-1	0	01/01/1980	0-1	5	Schilling
BEF	0-5105	01/01/1980	0-1	0	01/01/1980	0-1	4	Franc
BRC	0-5106	01/01/1980	0-1	0	01/01/1980	0-1	0	Real
CAD	0-5107	01/01/1980	0-1	0	01/01/1980	0-1	0	Dollar
COP	0-5108	01/01/1980	0-1	0	01/01/1980	0-1	0	Peso
DKK	0-5109	01/01/1980	0-1	0	01/01/1980	0-1	2	Krone
FIM	0-5110	01/01/1980	0-1	0	01/01/1980	0-1	4	Markka
FRF	0-5111	01/01/1980	0-1	0	01/01/1980	0-1	4	Franc
DEM	0-5112	01/01/1980	0-1	0	01/01/1980	0-1	4	Deutsche Mark
HTG	0-5113	01/01/1980	0-1	0	01/01/1980	0-1	0	Dollar
HUF	0-5114	01/01/1980	0-1	0	01/01/1980	0-1	0	Forint
ISK	0-5115	01/01/1980	0-1	0	01/01/1980	0-1	0	Krona
IEP	0-5116	01/01/1980	0-1	0	01/01/1980	0-1	6	Pound
ITL	0-5117	01/01/1980	0-1	0	01/01/1980	0-1	4	Lira
JPY	0-5118	01/01/1980	0-1	0	01/01/1980	0-1	2	Yen
KRW	0-5119	01/01/1980	0-1	0	01/01/1980	0-1	1	Won

ERP/CRM Integrator displays the result data set in tabular form. Additionally, there are one or more Detail Tabs to the right of the screen, which allow the user to examine all the fields of one row.

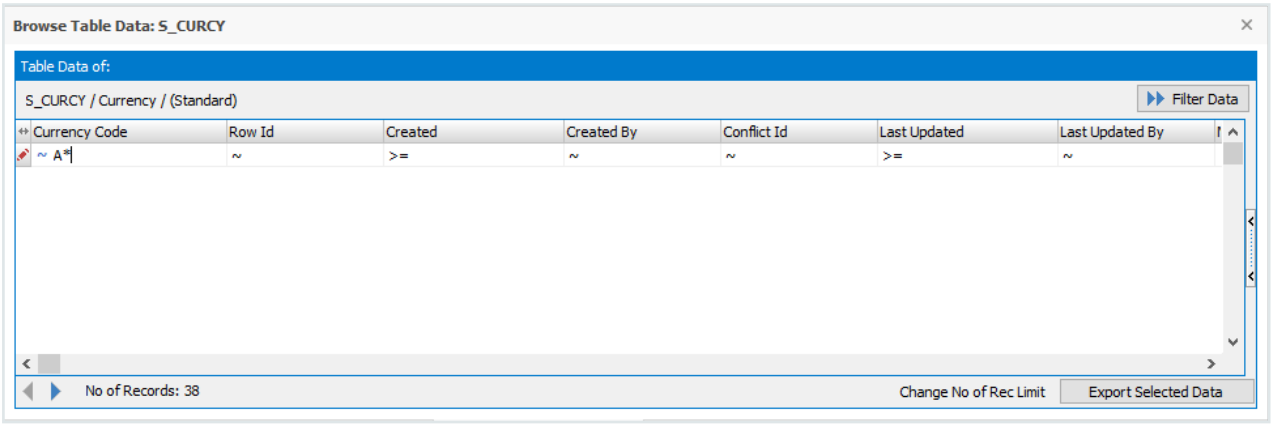
The columns in the data set can be re-arranged by dragging and dropping a column to a new position using the column title.

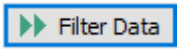
The data set can be sorted by clicking on the title for the required sort column. A second click will sort that column in descending order.

Using QBE (Query by Example) to interrogate data

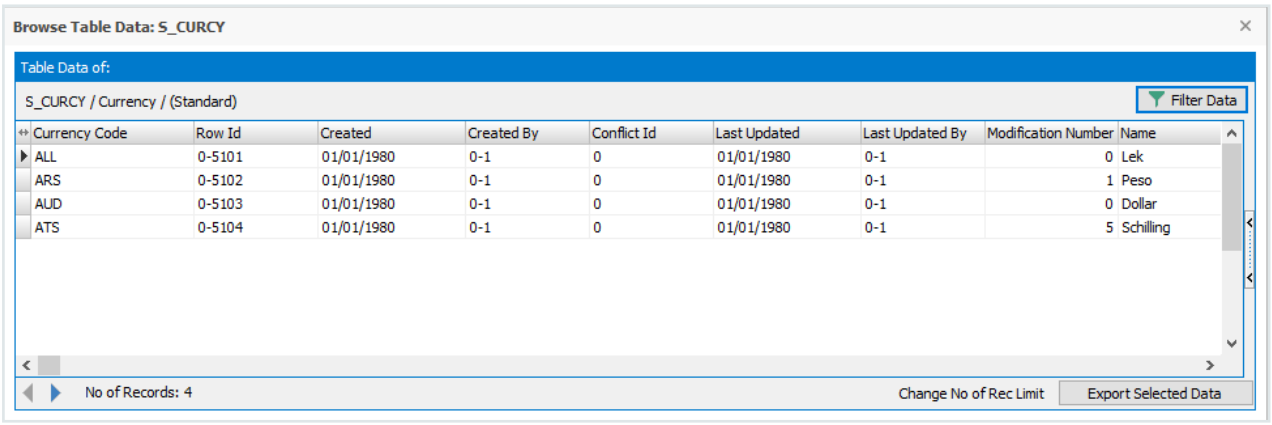
To restrict the data retrieved, click on the Filter Button 

. Queries can be built up by adding selection criteria to one or more fields.



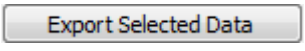
Click the 'Filter Data' Button 

to run the query.

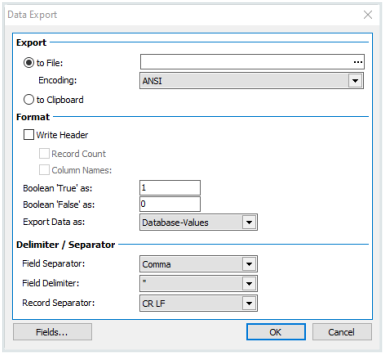


Exporting data to flat files

Exporting data from a single table

Having selected the required data, click on the 

Button. The data can be exported with or without column headings, using logical or physical names. A comma, tab or other character can be specified to delimit the export file.

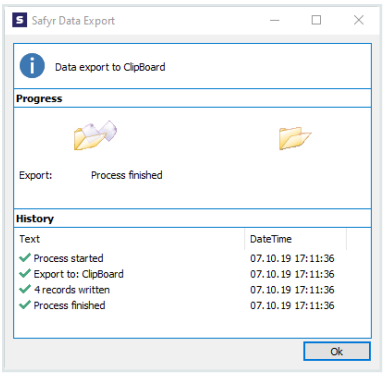


The Export form options are as follows:

- **File Name**: Enter the name of the file to export to. Use the ... button to browse for a file or folder. If this file does not exist, ERP/CRM Integrator will create it.
- **Write File Header**: Checking this option enables the additional options in the panel of 'Record Counter and 'Column Names'.
- **Record Counter**: Select this option to include a row count at the beginning of the export file.
- **Column Names**: Click the appropriate radio button to include either Logical or Physical names as column headers.
- **Field Separator**: Choose the appropriate character to act as a field separator in the exported file.
- **Boolean 'True' or 'False'**: Allows the user to specify suitable text values by which to represent Boolean values in the file.
- **Field Delimiter**: Choose the appropriate character to act as a field delimiter in the exported file
- **Record Separator**: Choose the appropriate character to act as a record separator in the exported file

The Fields... button toggles the 'Field' selector portion of the form on and off. In the field selector you can select fields for inclusion in the exported file.

Once the export options have been set, click OK to start the export. The following progress form shows the export running.

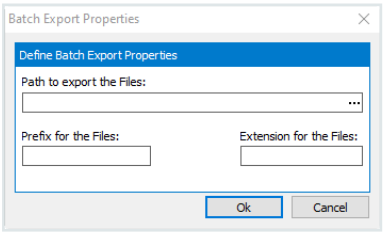


Export of a number of tables

This facility must be used with care as it will export all the data from any number of tables.

Firstly select the tables to be exported either using the various ERP/CRM Integrator search facilities or by putting selected tables into a subject area and loading the subject area into the model browser.

All tables selected into the Model Browser can be exported by Right Mouse Clicking on the model browser and selecting Export Source Data (Full Selection) from the pop-up menu. The 'Batch Export Properties' form is then displayed.



For the export, each table will be exported into a separate file in the chosen export directory. Specify a Path for the location of the exported text files.

Select a prefix and extension for the export files.

On clicking OK ERP/CRM Integrator displays the same Data Export form used for a single table data export (but without the 'Field' selection feature).

After selecting the appropriate setting and clicking the 'OK' button, each table in the Model Overview selection is exported to flat file.

Creating SQL scripts for table access

This feature of ERP/CRM Integrator is an aid to making direct access to the source application (e.g. PeopleSoft) easier for any tool that uses SQL to interrogate the data.

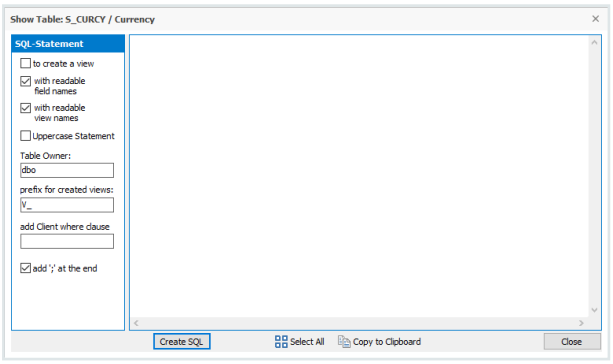
By selecting a base table, a database view can be generated, or a select statement that uses the 'business names' as an alias. The example below shows a view generated from SAP table A008. The Table Description from SAP becomes the View name and the Field Description for each field becomes an alias.

```
SELECT
  CURCY_CD AS Currency_Code,
  ROW_ID AS Row_Id,
  CREATED AS Created,
  CREATED_BY AS Created_By,
  CONFLICT_ID AS Conflict_Id,
  LAST_UPD AS Last_Updated,
  LAST_UPD_BY AS Last_Updated_By,
  MODIFICATION_NUM AS Modification_Number,
  NAME AS Name,
  ACTIVE_FLG AS Active_Flag,
  END_DT AS End_Date,
  START_DT AS Start_Date,
  CURCY_SYMBOL AS Currency_Symbol,
  DECIMAL_SYMBOL AS Decimal_Symbol,
  EURO_FLG AS Euro_Triangulation_Required_Flag,
  QUALIFIER AS Qualifier,
  DCKING_NUM AS Docking_Number,
  DEGREE_OF_PREC AS Degree_Of_Precision,
  EXTEND_PRECISION AS Extend_Precision,
  MIN_ACCT_UNIT AS Minimum_Acct_Unit,
  ISSUING_COUNTRY AS Issuing_Country,
```

```
  DESC_TEXT AS Descriptive_Text
FROM dbo.S_CURCY
```

To generate Views or Select Statements

Right Mouse Click on the appropriate table in the ERP/CRM Integrator Model Overview and choose 'Create SQL Scripts'. This displays the script creation form shown on the next page.



The options on the left of the form dictate how the view or select statement is generated.

- **To create a view** – check this box to create a view, leave unchecked to create a select statement.
- **With readable field names** – check this box to use the field name as an alias.
- **Uppercase Statement** – check to have the generated text in upper case characters.
- **Table Owner** – specify the database table owner to be used as a prefix to the Table Name in the generated text.
- **Prefix for created views** –specify a string to be used as a prefix for the View name.
- **Add Client where clause** – allows specification of a SAP 'Client' (MANDT) for inclusion in the generated text 'where' clause.
- **Add ';' at the end** – tail the generated statement with an ';'.

Having made the appropriate selections, click the 'Create SQL' button to generate the required statement.

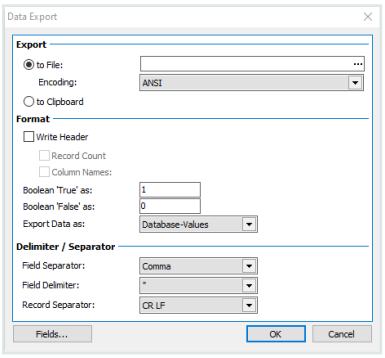
The 'Select All' and 'Copy to Clipboard' buttons can now be used to select and copy the generated text for transfer to another application, if required.

Exporting a list of tables

This feature of ERP/CRM Integrator can be used to create simple list of tables from the Model Overview.

Right Mouse Click on the ERP/CRM Integrator Model Overview and choose 'Export Table List to File or Clipboard'

The following screen is then displayed.



The Export form options are as follows:

- **To File or to Clipboard**: Choose the appropriate option to export to a file or to the Clipboard
- **File Name**: Enter the name of the file to export to. Use the ... button to browse for a file or folder. If this file does not exist, ERP/CRM Integrator will create it.
- **Output Encoding**: Choose the output encoding required. This can be ANSI, UTF16 or UTF8.
- **Write Header**: Checking this option enables the additional options in the panel of 'Record Counter and 'Column Names'.
- **Record Counter**: Select this option to include a row count at the beginning of the export file.
- **Column Names**: Click the appropriate radio button to include either Logical or Physical names as column headers.
- **Field Separator**: Choose the appropriate character to act as a field separator in the exported file.
- **Boolean 'True' or 'False'**: Allows the user to specify suitable text values by which to represent Boolean values in the file.

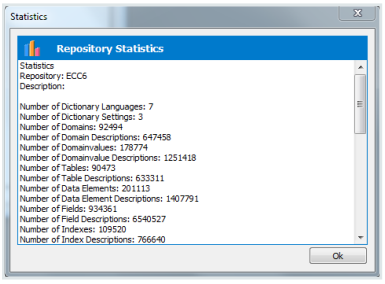
- **Field Delimiter**: Choose the appropriate character to act as a field delimiter in the exported file
- **Record Separator**: Choose the appropriate character to act as a record separator in the exported file

The Fields... button toggles the 'Field' selector portion of the form on and off. In the field selector you can select fields for inclusion in the exported file.

After making the appropriate selections, click 'OK' to generate the export to the specified File or the Clipboard.

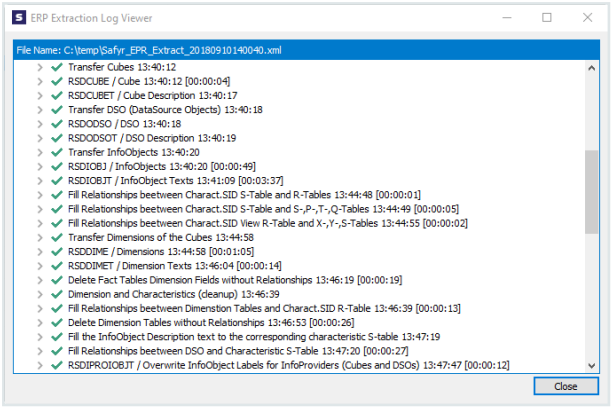
Viewing Model Statistics

The 'Statistics' option on the ERP/CRM Integrator View menu will display a form showing a summary of the 'objects' extracted and stored in the ERP/CRM Integrator repository.



The ERP Extract Log

During the extraction of metadata from the chosen Enterprise Application, ERP/CRM Integrator records a log of the extraction steps in the form of an XML file. This log file can be viewed by selecting 'Show ERP Extract Log...' from the ERP/CRM Integrator 'Tools' menu.



At the completion of each extract the log file is written to the ExtractLog folder. This folder is located within the 'Users' folder. This will typically be \Users\<User Name>\AppData\Roaming\Silwood\ERP/CRM Integrator 7\ExtractLog\.

During the extract process, the Log can be saved at any stage by Right Mouse Clicking on the background and selecting 'Export Log...'

The Export Log

The Export Log is similar to the Extract Log described in the previous section. This log is produced when one of ERP/CRM Integrator's Export formats is used. The log file can be viewed by selecting 'Show Export Log...' from the ERP/CRM Integrator 'Tools' menu.

Subject Areas

Subject Areas allow tables and views in ERP/CRM Integrator to be divided into manageable 'chunks'. Subject Areas allow you to:

- Create subsets of the full set of tables in the ERP/CRM Integrator repository – a ERP/CRM Integrator subject area is like a folder where you can group together tables of interest.
- Create subsets of the fields for each table (see 'Subject Areas and Marked Fields' below). ERP/CRM packages often have tables with many fields (sometimes hundreds). This feature enables the user to select as many (or as few fields) as meets their requirement.
- Qualify Searches – A subject area can be used in combination with the other ERP/CRM Integrator search capabilities to limit the scope of the search being performed. e.g. "Find

me all the tables that have a field with the text 'order date' in the field description that are in the 'Warehouse' subject area".
- Export into other tools – The subject area is the vehicle for exporting data definitions into any of the ERP/CRM Integrator tool interfaces. All the tables of the subject area will be exported to the chosen tool.

The members of a subject area are simply references to the tables and views grouped in that subject area. Deleting a subject area member only deletes the reference to that table or view and not the table or view itself.

The contents of a subject area can be moved from one Repository to another Repository using the subject area backup/restore feature described below.

A table may exist in zero, one or more Subject Areas, and the field subsets (see 'Subject Areas and Marked Fields' below) are specific to a given Subject Area.

Subject Areas and Marked Fields

ERP/CRM Integrator uses a concept called 'Marked Fields' to allow the user to select one or more fields in a given table. When exporting a Subject Area from ERP/CRM Integrator, the user can decide to export all fields for the tables in a Subject Area, or just the marked fields.

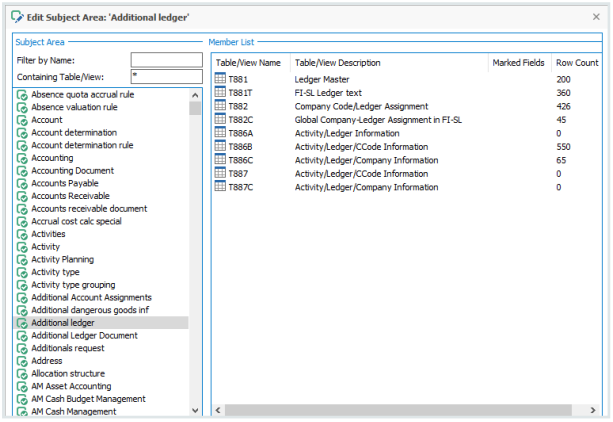
There are two approaches available in ERP/CRM Integrator to 'mark' fields:

- Using Search Criteria – when ERP/CRM Integrator search criteria that select tables by 'Field' attributes are active, the matching fields can be automatically marked.
- Marking fields manually – In addition to using search criteria, fields may be selected/deselected as 'marked'. See 'Marking Fields Manually' below for details on how to manually mark fields.

> **Note**
> - If a Table is in a Subject Area and has no explicitly marked fields, then an export of that Subject Area to one of the ERP/CRM Integrator export formats will include all the fields for that table.
> - Marked Fields can only exist within the context of a Subject Area. Two or more Subject Areas may reference the same table and each table can have differing Marked Fields.

Managing Subject Areas

To create, delete or change a Subject Area, click the  icon on the ERP/CRM Integrator toolbar, or select 'Subject Areas' from the 'Edit' menu, or select 'Group Tables into Subject Areas' from the ERP/CRM Integrator Navigation Tiles. This will display the Edit Subject Areas form which has features for creating and populating subject areas.



The list on the left shows the existing Subject Areas. This will be empty the first time an extraction is performed from a given ERP/CRM system. The members of a Subject Area are shown on the right when a Subject Area is selected.

Where Fields have been 'Marked', the number of Marked Fields is shown. If this is blank for a given table, then no Fields of that table have been Marked.

The Row Count column shows how many data rows are in each table. This will show as '-1' for Views.

The 'Filter by Name' box can be used to sub-set the list of Subject Areas to those matching the entered string.

The 'Containing Table/View' box can be used to sub-set the list of Subject Areas to those containing a Table or View that match the entered string.

The controls at the bottom of the Subject Area screen are as follows:

-  : Click to change the name of the current Subject Area.
-  : Click to create a new Subject Area. See 'Adding a New Subject Area' below.

-  : Copy the selected Subject Area to a new Subject Area. This will create a new Subject Area, copying the Subject Area Members from the first Subject Area and with the same name as the first Subject Area with '(Copy)' appended.
-  : Click to delete the currently selected Subject Area. You will be asked to confirm this deletion and then the Subject Area and its contents will be deleted.
-  : Subject Area Tools – see below for the expansion of this menu
  -  : Expand the Subject Area by creating a list of related parent and/or child tables. See 'Expanding a Subject Area with related Parent or Child Tables' below.
  -  : Export Selected Subject Area. This option starts the Export Wizard (see Chapter : Exporting metadata) using the currently selected Subject Area.
  -  Restore. A subject area and its contents, previously exported, may be loaded into a separate Repository. On clicking this option, you will be prompted for the file name of the subject area to be imported. On accepting this, the current subject area will be updated with the contents of the export file.
  -  : Import from Excel. A subject area can be created based upon an Excel spreadsheet. Details of the Excel structure are described in Appendix C.
  -  :Backup All Subject Areas. This option exports all subject areas into an export file. This file can be used to populate another subject area in the same or a different ERP/CRM Integrator repository. On clicking this option, you will be prompted for the file name of the subject area to be exported. On accepting this, the subject areas and their members will be written to the export file.
  -  : Backup Selected Subject Area. This option exports the currently selected subject area into an export file. This file can be used to populate another subject area in the same or a different ERP/CRM Integrator repository. On clicking this option, you will be prompted for the file name of the subject area to be exported. After accepting this, the current subject area and its members will be written to the export file.

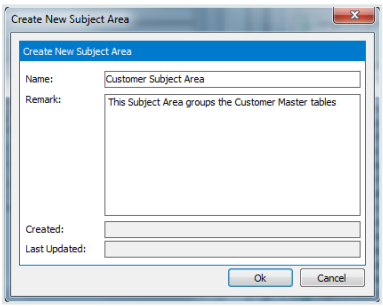
For the Subject Area members, the following tools are available:

-  : Show Details of the currently selected Table or View.
-  : Delete. This option will delete the currently selected item in the subject area.

- : Delete All. This will delete all the items in the subject area. A form will be displayed, asking for confirmation of the delete action before the items are removed.
- : Copy selected members.
- : Paste selected members. These two tools (Copy, Paste) can be used to copy not only the tables from one Subject Area to another but also their Marked Fields. Where the tables exist in both 'source' and 'target' Subject Areas, the Marked Fields for the two versions of the Table will be merged.

Adding a New Subject Area

Clicking the 'Add new Subject Area' icon will display the 'Create New Subject Area' screen.



Enter a suitable name for the Subject Area, and (optionally) a description. The Created User ad Updated Date/Time are automatically set after clicking the 'OK' button.

Adding tables to a Subject Area

There are three main places for populating a subject area, each of which is described in the following sections.

- From the Model Overview
- From the Related Tables form
- From the Application Hierarchy

Populating a Subject Area from the Model Overview

This approach to populating a subject area uses the current set of tables in the Model Overview. These can be added to an existing Subject Area, or a new Subject Area can be

created and populated with the chosen tables in one step.

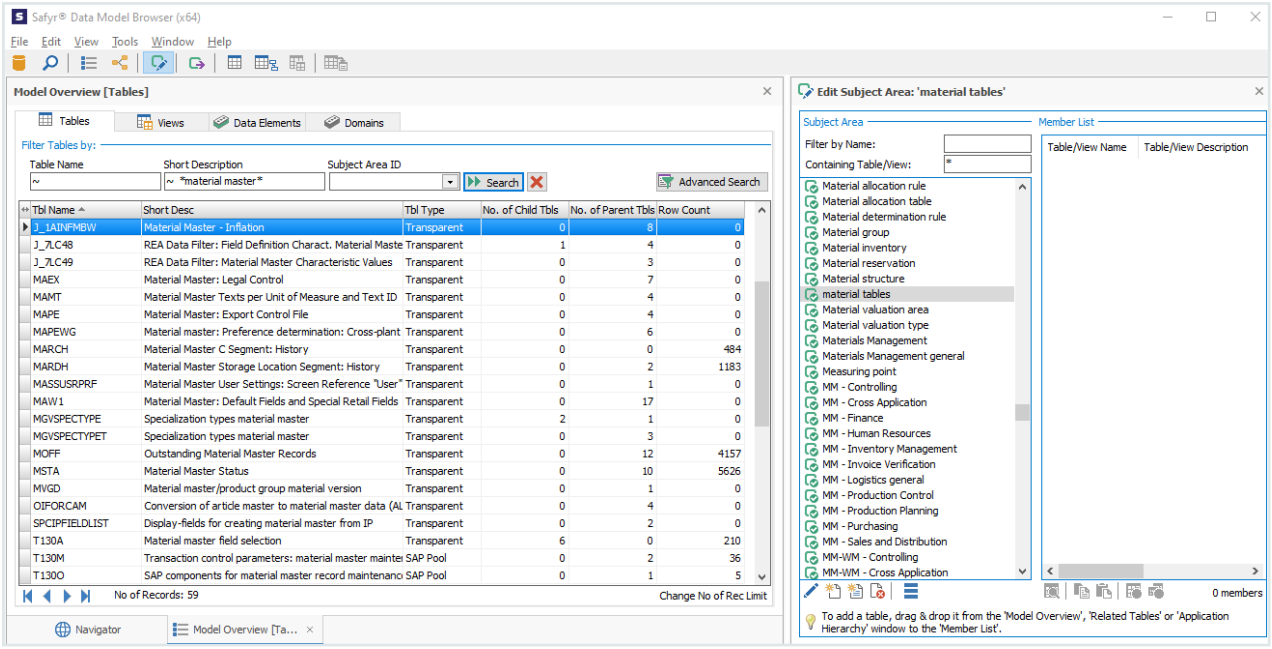
Individual tables can be added to the currently selected subject area by dragging and dropping from the Model Overview into the Subject Area. Alternatively, use the Select Tables features described above (see 'Selecting tables in the model overview') to reduce the list of tables to a manageable size. Then, Right Mouse Click on the list of tables in the Model Overview and click one of the following:

Add Table <name> to Subject Area <Subject Area name> <field range>
Add the selected <number of tables> to Subject Area <Subject Area name><field range>
Add Table <name> to a 'New Subject Area' <field range>
Add the selected <number of tables> to a 'New Subject Area' <Subject Area name> <field range>

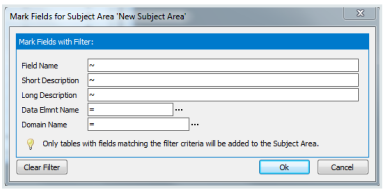
If the Subject Area editor is already open, then one of the first two options in the table will be displayed and the <Subject Area name> will be set to that of the Subject Area currently selected in the Subject Area editor. If the Subject Area editor is not open, then one of the last two options in the table will be displayed and after choosing the 'Add...' option, an additional screen will prompt the user to enter the name of the new Subject Area.

The 'field range' option will be either:

all fields	All fields of each table will be part of the Subject Area
only marked fields	Only those fields explicitly marked will be added to the Subject Area. This option will also prompt the display of an additional screen. See 'Filter Screen for Marked Fields' below.



Filter Screen for Marked Fields



When choosing the '...(only marked fields)' option for populating a Subject Area, the Marked Fields with Filter screen is displayed.

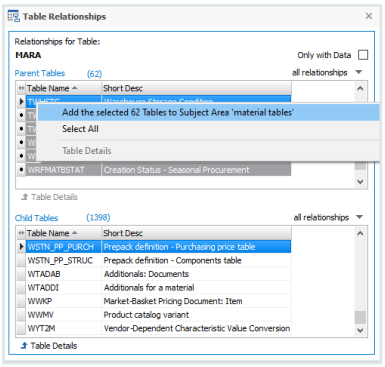
If there are any active Field level search criteria from the Advanced Search screen currently selected, these will be shown. In order to select the Fields for inclusion in the Marked Fields for the Subject Area, it will be necessary to enter suitable search criteria.

Populating a Subject Area from the Related Table form

Another method of adding tables to a subject area is to choose tables from the Related Tables form. This is useful when looking for tables that are 'parent' or 'child' tables of a given table.

To achieve this display the Related Tables form for the appropriate table (see 'Viewing parent/child relationships' in this chapter).

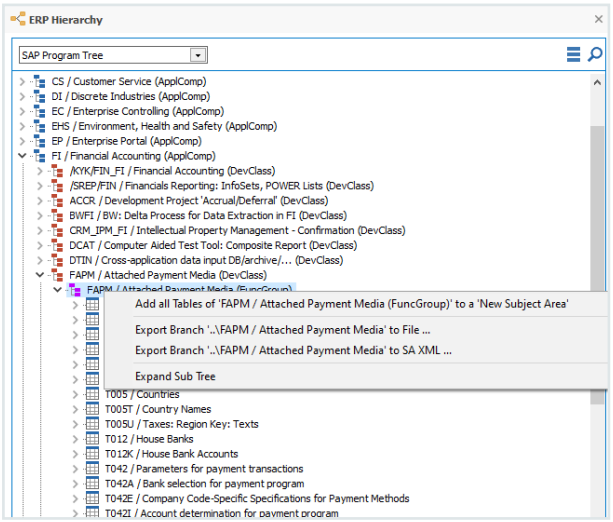
Similar options for Adding individual or selected tables apply here, as described in the previous section ‘Populating a Subject Area from the Model Overview’, but without the ‘marked fields’ option.



Populating a Subject Area from the Application Hierarchy

The Application Hierarchy presents tables and views as nodes of a ‘tree’ where the nodes represent application modules and sub-modules. Any node of this tree can be used to populate a subject area.

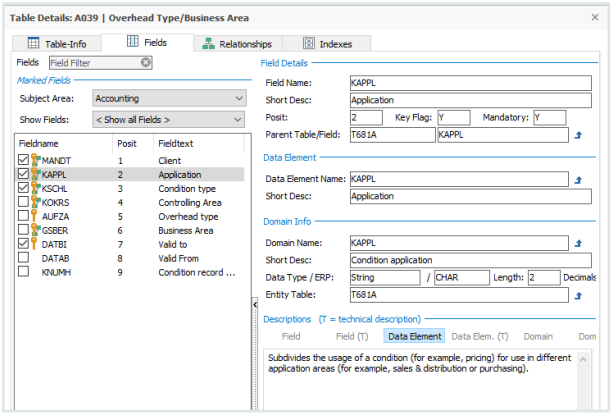
Either drag and drop the node or table from the hierarchy into the subject area, or use the Right Mouse menu and select one of the ‘Add all...’ options to add the tables and/or views belonging to that node to the subject area. As with the previous two methods, slightly different options are presented, depending on whether or not the Subject Area editor is already open.



Marking Fields Manually

Once a table is added to a Subject Area, additional options become available for managing the Marked Fields.

Opening the Table Details screen from the Subject Area editor will reveal a set of check boxes that correspond to each Field. Any previously marked fields will already have the check box set 'on'.



Two drop down lists are available.

- **Subject Areas**: This shows those Subject Areas of which the Table is a member. Choosing a different Subject Area will show the Marked Fields relevant to that Subject Area.
- **Show Fields**: This allows the visible Fields to be filtered as follows:
- **Show all Fields**: shows all the fields
- **Show Marked Fields**: shows marked fields only
- **Show Primarykey Fields**: shows Primary Key fields only
- **Show Foreignkey Fields**: shows Foreign Key fields only

These filters can be used in combination to show (for example), Marked Fields AND Primary Key Fields.

Marking View Fields

The Marked Fields features described above are also available for Views. Whilst the layout of the View screens is slightly different to those for Base tables, the method for marking View Fields is essentially the same and is not described in detail here.

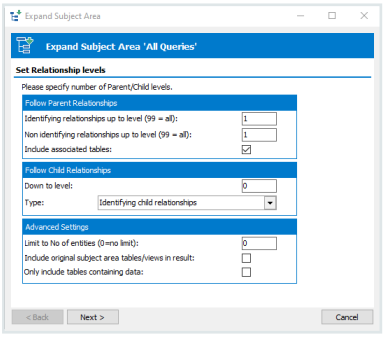
Expanding a Subject Area with related Parent or Child tables

The sections above have dealt with populating a Subject Area by finding tables and adding those tables to the Subject Area. The Subject Area itself can also be used to 'expand' the tables in the Subject Area by finding the related Parent and/or Child tables.

This feature uses the tables already in the Subject Area as 'seed tables'. The user can then choose options that will generate a list of tables related to each table in the Subject Area to a user-specified level of Parent and/or Child tables. This generated list can then be reviewed and the tables either added to the starting Subject Area, or added to a separate Subject Area.

The expansion process is started by choosing the Subject Area containing the 'seed' tables and then clicking the  icon on the Subject Area tool bar. This option is within the Subject Area tools menu -  .

This will display a screen for selecting the levels of related tables to be included.

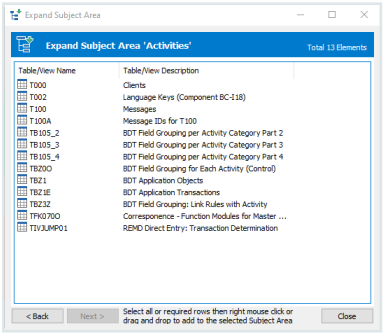


- Follow Parent Relationships. This option will include any tables that have 'Parent' relationships to the tables in the Subject Area chosen. For each of the two options available, the level number dictates how many generations of 'ancestors' to include. '1' indicates direct parent ancestors. '2' would indicate parents of the parents and so on. The two further options within this are:
    - Identifying relationships up to level: includes those relationships where the primary key fields of the 'parent' table form part of the primary key of the child table
    - Non-Identifying relationships up to level: includes those relationships where the primary key fields of the 'parent' table do not form part of the primary key of the child table

- Follow Child Relationships: This option will include any tables that have 'Child' relationships to the tables in the subject area. This option is further qualified by the next option of 'Only Identifying Relationships'. Selecting this option will only include 'child' tables where the primary key fields of the 'parent' table form part of the primary key of the child table.

- Limit To: The Maximum Number of Entities to be assembled. '0' denotes no limit.
- Include original Subject Area tables/views in result: The set of tables in the Subject Area that are used as the basis of finding related tables will also be included in the result set if this option is selected.
- Only include tables containing data: The set of tables resulting from the search will be restricted to those that have a Row Count greater than zero.

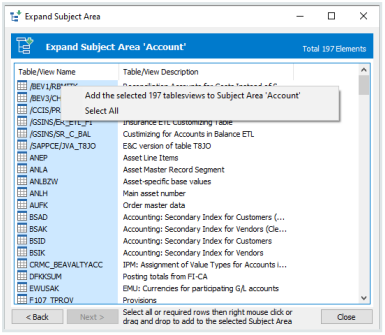
After setting the Relationship Levels as described above, clicking the 'Next' button will start the process of assembling the related table list. The resulting set of tables are then displayed.



The number of tables in the list is displayed at the top right of the screen.

From this screen the options for the user can be:

- Clicking the 'Back' button to refine the selection criteria to produce a different list of tables
- Clicking the 'Close' button to terminate the process
- Selecting rows from the result set and adding these to the original Subject Area or a different Subject Area.



Creating additional Relationships not extracted from the source Application

ERP/CRM Integrator represents relationships from SAP by extracting the relationship definitions defined within the SAP Repository. This means that the relationships represented by ERP/CRM Integrator are the same as those viewable by the ABAP Workbench Data Dictionary tool.

In the case of J.D. Edwards EnterpriseOne, there are no formal relationship definitions within the data dictionary.

The PeopleSoft data dictionary defines some relationships but not really enough to allow good data models to be derived.

ERP/CRM Integrator users can use features within the product to add additional relationships to those found in the ERP data dictionary. Slightly different approaches have been taken for SAP, PeopleSoft Enterprise and J.D. Edwards EnterpriseOne, taking into account the characteristics of these three applications.

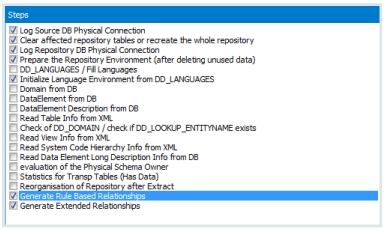
There are two possible methods for creating these additional relationships:

- Creating Rules Based Relationships: This method is available for SAP, PeopleSoft and JDEdwards repositories. ERP/CRM Integrator uses a set of spreadsheet-based relationship definitions to build additional relationships.
- Creating Extended Relationships: This method is available for SAP, PeopleSoft and JDEdwards repositories. ERP/CRM Integrator infers additional relationships by looking for possible Primary Key and Foreign Key pairings.

Full details of these methods are described in Appendix B.

Creating additional Relationships

The creation of additional relationships is normally carried out as part of the application extraction process (see the ERP/CRM Integrator 'Getting Started Guide', Chapter : Extracting Metadata for more details.)

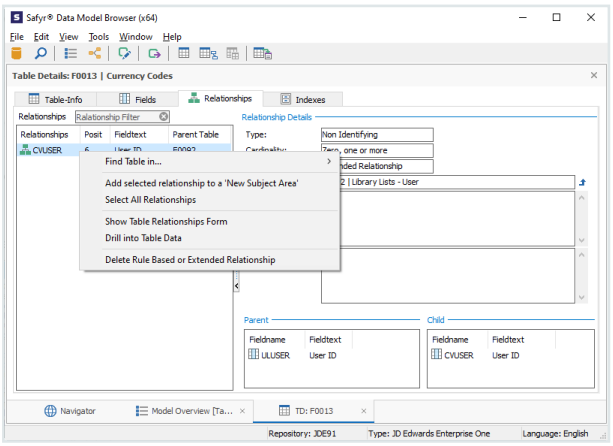


Reviewing generated Relationships

ERP/CRM Integrator creates rules-based and extended relationships using the approach described above. Using such an approach, it may be possible that relationships are created that do not have a 'real world' existence. To accommodate this, a 'Delete' feature is available to physically remove the relationship from the ERP/CRM Integrator repository.

To delete a Rules Based or Extended Relationship

Locate the Relationship to be removed and open the Relationship details in the Table Details form. Right Mouse Click on the chosen relationship to show a pop-up form.



From the pop-up choose 'Delete Rules Based or Extended Relationship'. It will be necessary to confirm the deletion to actually remove the relationship from the ERP/CRM Integrator repository.

This ‘Delete’ feature is not enabled for ERP-based relationships.

> **Note** Once a Rules Based or Extended Relationship has been removed from the repository, the only way to reinstate is to rerun the ‘Generate Rules Based Relationship’/’Generate Extended Relationship’ option again.

Exporting metadata from ERP/CRM Integrator

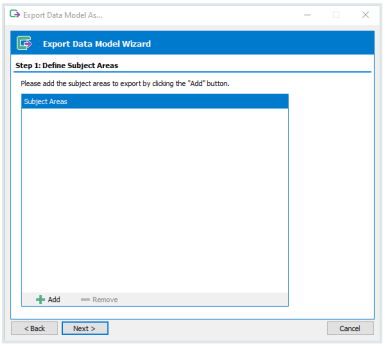
Describes how to move metadata out of ERP/CRM Integrator and into other environments

The exploration features described in the previous chapter are principally aimed at locating data items of interest from the set of tables available in the ERP/CRM Integrator repository. There will often be a need to move subsets of the objects into other tools in use within the organization.

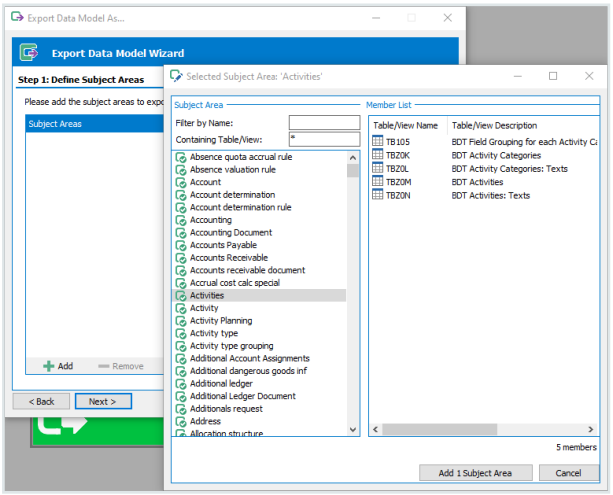
The vehicle for exporting metadata from ERP/CRM Integrator is the Subject Area. Whilst the target tool that requires the metadata will differ in how it deals with the information provided by ERP/CRM Integrator, the general procedures for exporting metadata are identical.

Getting ready to export

To begin the process of exporting the chosen data definitions to the tool of choice, click the  icon on the ERP/CRM Integrator tool bar, or choose ‘Export Data Model as...’ from the File menu, or select ‘Export Subject Areas....’ from the ERP/CRM Integrator Navigation Tiles. This opens the Export Data Model Wizard. Click the ‘Next’ button to start the export steps.



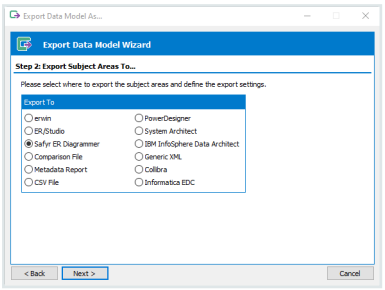
The ‘Define Subject Areas’ form is for selecting one or more subject areas to be exported. Click the ‘Add Subject Areas’ button to begin the process of choosing the Subject Area or Areas to be exported



Select one or more Subject Areas to be exported and click the ‘Add <n> Subject Area’ button to add these to the export area.

Click the ‘Next’ button to progress to the next stage of the export wizard.

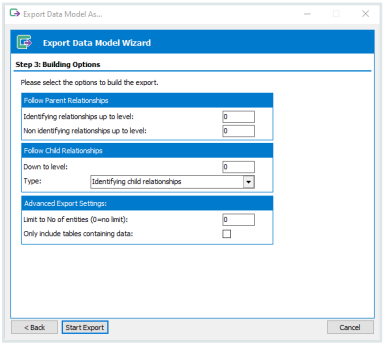
The next form displayed is the place to choose the export format. The actual export formats displayed and the subsequent wizard steps will depend on the formats that your ERP/CRM Integrator installation has been configured to use.



- **Export to**: This is for choosing the target for the Export information. The available options will depend upon the ERP/CRM Integrator product license.
- **File Name and Location**: Use this control to specify a location and name for the export file, if required.
- **Startup Command...**: If there is a program associated with the export file type, a command line string can be specified here so that, after the file has been created, the target tool can be started automatically and the file opened. Note that it is important to append the '%F' parameter to the command string in order for the file name to be passed as a parameter to the program. Check the 'Enable Command' checkbox to start using this feature.

Click the 'Next' button to move to the next stage of the Export wizard.

The export functionality is influenced by the 'Building Options' form, which is the next step of the export wizard.



Possible Settings are:

- **Follow Parent Relationships**: This option will include any tables that have 'Parent' relationships to the tables in the Subject area chosen. For each of the two options available, the level number dictates how many generations of 'ancestors' to include. '1' indicates direct parent ancestors. '2' would indicate parents of the parents and so on. The two further options within this are:
    - **Indentifying relationships up to level**: includes those relationships where the primary key fields of the 'parent' table form part of the primary key of the child table
    - **Non Identifying relationships up to level**: includes those relationships where the primary key fields of the 'parent' table do not form part of the primary key of the child table
- **Follow Child Relationships**: This option will include any tables that have 'Child' relationships to the tables in the subject area. This option is further qualified by the next option of 'Type'.
- **Non Identifying relationships up to level**: includes those relationships where the primary key fields of the 'parent' table do not form part of the primary key of the child table
- **Follow Child Relationships**: This option will include any tables that have 'Child' relationships to the tables in the subject area. This option is further qualified by the next option of 'Type'.

Type: this determines the scope of the 'child' related tables to be included. Possible values are:

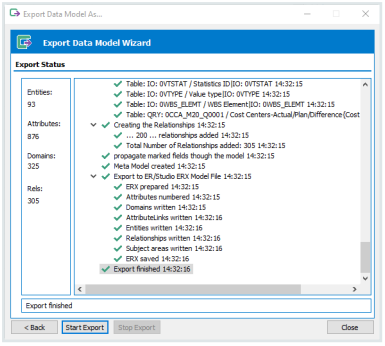
- All child relationships
- Identifying child relationships - only includes 'child' tables where the primary key fields of the 'parent' table form part of the primary key of the child table.

Limit to No of Entities: The Maximum Number of Entities to be exported. Zero denotes no limit.

Only include tables containing data: The set of tables assembled will be restricted to those that have a Row Count greater than zero.

Limit the Export to "Marked Fields": The set of fields assembled for each table will be limited to the Marked Fields if this option is selected, plus the Primary Key fields of the table. If there are no marked Fields for any tables in the Subject Area, this option will not be dispalyed.

Now click the 'Start Export' button to begin the export process. The Export Status form is displayed to allow you to monitor the progress of the export. This shows a 'hierarchy' of tables being exported and a running total of the objects being exported. Once this process has completed, the exported information will be available for use.



The CSV export format

This is a proprietary, text-based file, aimed at providing a means to export metadata from ERP/CRM Integrator for any third party tool to access.

```
<TABLES>

TABLE_OBJECT_ID,PHYSICAL_NAME,LOGICAL_NAME,IS_VIEW,IS_
POOL,POOLTABLE,POOLDESC

0,MARA,Material Master  General Data,0,0,,

<END_TABLES>


<COLUMNS>

COLUMN_OBJECT_ID,TABLE_OBJECT_ID,PHYSICAL_NAME,LOGICAL_NAME,IS_
PK,IS_FKEY,IS_NULLABLE,FULLSQLTYPE,LEN,DEC,SQLTYPE,DOMAIN_
DATATYPE,POOLEXPR,POOLDLLFLDNR

10001,0,MANDT,Client,1,0,0,VARCHAR(3),3,0,VARCHAR,CLNT,,

10002,0,MATNR,Material,1,0,0,VARCHAR(18),18,0,VARCHAR,CHAR,,

10003,0,ERSDA,Created on,0,0,1,CHAR(8),8,0,CHAR,DATS,,

10004,0,ERNAM,Created by,0,0,1,VARCHAR(12),12,0,VARCHAR,CHAR,,

10005,0,LAEDA,Last change,0,0,1,CHAR(8),8,0,CHAR,DATS,,

10006,0,AENAM,Last changed by,0,0,1,VARCHAR
(12),12,0,VARCHAR,CHAR,,

10007,0,VPSTA,Compl  maint  status,0,0,1,VARCHAR
(15),15,0,VARCHAR,CHAR,,
The CSV format includes details of Tables, Columns and Rela-
tionships and is in a self-documenting format.
```

The Generic XML export format

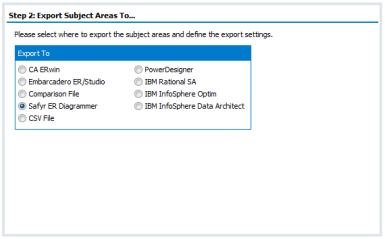
The Generic XML export format is similar in purpose to the CSV export format in that it provides a means for tools that can consume XML to import metadata created from ERP/CRM Integrator.

The XML format fully describes the set of Entities, Attributes and Relationships exported from ERP/CRM Integrator. An XSD file is provided in the ERP/CRM Integrator Documentation folder that describes the XML format used.

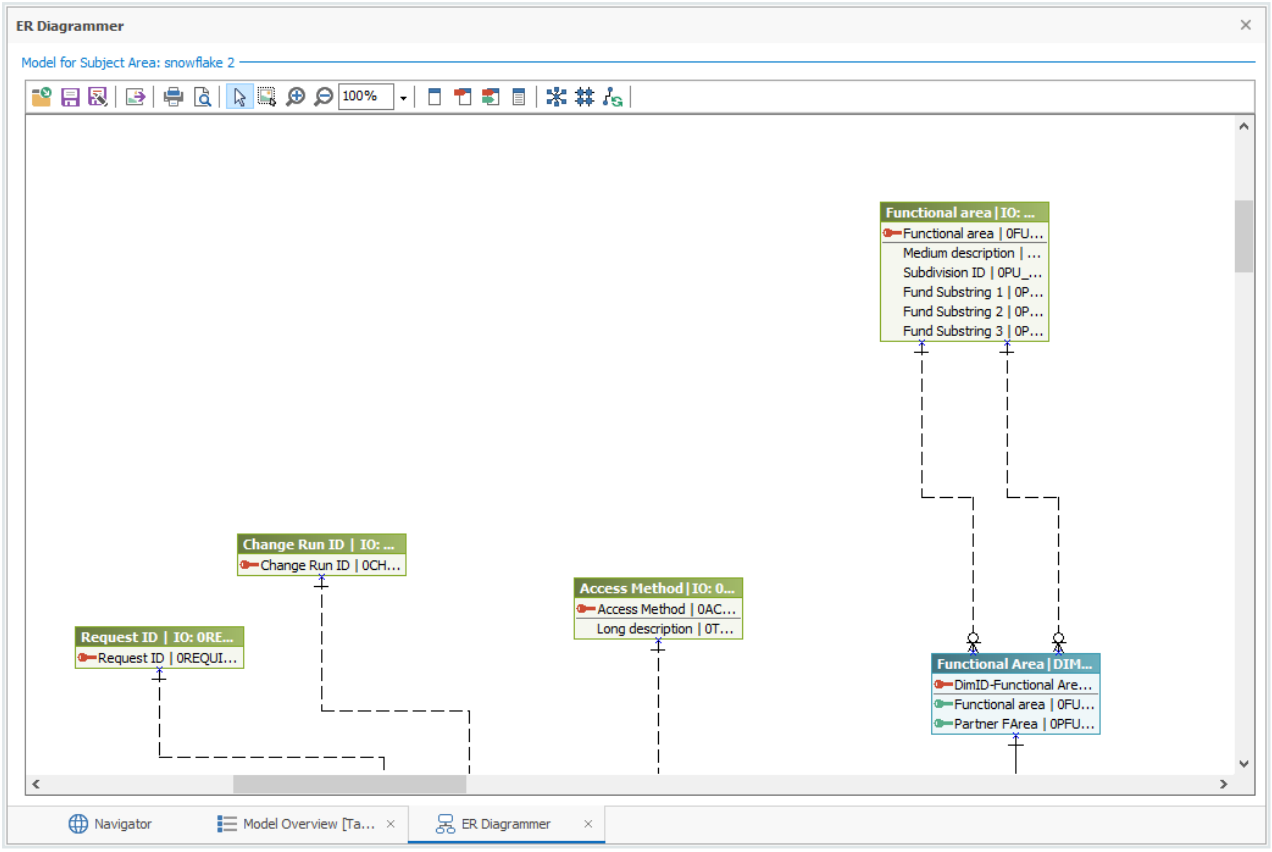
Exporting to the ERP/CRM Integrator ER Diagrammer

One of the optional export formats available with the product is ERP/CRM Integrator's own diagramming environment, ER Diagrammer. This provides a simple method for representing the chosen tables as a datamodel.

To create a diagram, use the Export Wizard, as described above, choosing 'ERP/CRM Integrator ER Diagrammer' as the Export type.

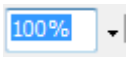


Once the export process is completed, the diagram will appear.



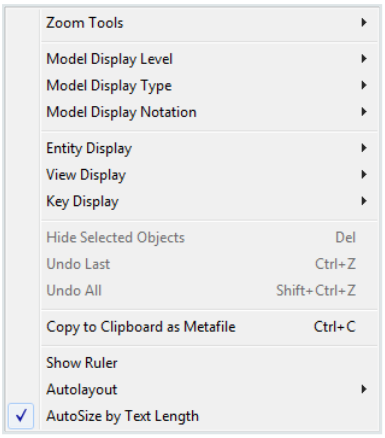
ER Diagrammer has its own toolbar. The available options are described in the table below.

Tool Button	Tool Button Name	Details
	Open diagram	Open an existing diagram, saved in ER Diagrammer
	Save diagram	Save the diagram
	Save diagram as	Save the diagram with a different name
	Export diagram as image	Export the diagram in bitmap or Windows metafile format
	Print	Print the current diagram
	Print Preview	Show how the model will look when printed
	Select Tool	Switch to the Select tool for selecting objects on the diagram

Tool Button	Tool Button Name	Details
	Snapshot Tool	After selecting this, click on the diagram and select an area to be copied to the clipboard
	Zoom In	Increase the magnification level for the diagram
	Zoom out	Decrease the magnification level for the diagram
	Set zoom level	Enter a percentage scale for zooming the diagram, or select one of the pre-set levels using the drop down list.
	Entity Level Display	Changes the diagram to display only Entity names (i.e. no Attributes are displayed)
	Primary Key Level Display	Changes the diagram to display only Primary Key attributes
	Primary and Foreign Key Level Display	Changes the diagram to display only Primary and Foreign Key attributes
	All Attribute Level Display	Changes the diagram to display all Attributes
	Star Layout	Auto-layout the diagram in a Star-schema style
	Orthogonal Layout	Auto-layout the diagram using an Orthogonal approach
	Update Links	Adjust the relationships lines for optimal layout

The ER Diagrammer Right Mouse Click Menu

A Right Mouse Click on the diagram will show a pop-up menu with a range of options for refining the model display.



This menu is context sensitive. All available options are summarized in the following table:

Menu	Sub-menu	Details
Zoom tools	Zoom In	Changes the cursor to the 'Zoom in' tool.
	Zoom Out	Changes the cursor to the 'Zoom out' tool.
	Fit Model	Fits the diagram into the available ER Diagrammer work space
	Fit Selection	Fits the diagram to encompass selected objects. If no objects are selected, the behaviour is the same as for 'Fit Model'
Model Display Level	Entity	Changes the diagram to display only Entity names (i.e. no Attributes are displayed)
	Primary Key	Changes the diagram to display only Primary Key attributes
	Primary and Foreign Keys	Changes the diagram to display only Primary and Foreign Key attributes
	All Attributes	Changes the diagram to display all Attributes
Model Display Type	Logical	Display Logical Entity and Attribute names on the diagram
	Physical	Display Physical Entity and Attribute names on the diagram
	Logical/Physical	Display both Logical and Physical Entity and Attribute names on the diagram

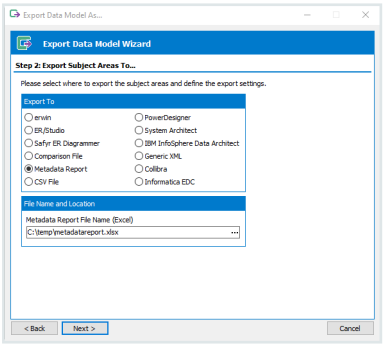
Menu	Sub-menu	Details
Model Display Notation	Information Engineering	Use Information Engineering for the model notation
	IDEF1X	Use IDEF1X for the model notation
Entity Display	Domain	For each Entity in the model, show the Domain name of each Attribute
	Datatype	For each Entity in the model, show the Data type of each Attribute
View Display	Datatype	For each View in the model, show the Data type of each Attribute
	Null Option	For each View in the model, show the Nullability of each Attribute
	Domain	For each View in the model, show the Domain name of each Attribute
	Expression	For each View in the model, where an Attribute is a calculated field, show the Expression for that field
Key Display	Primary Key Designator	Show the Primary Key Designator ('PK') for each Primary Key Attribute
	Foreign Key Designator	Show the Foreign Key Designator ('FK') for each Foreign Key Attribute
	Primary Key Icon	Show the Primary Key Icon for each Primary Key Attribute
	Foreign Key Icon	Show the Foreign Key Icon for each Foreign Key Attribute
Hide Selected Objects		Hide objects on the diagram, previously selected using standard Windows selection techniques (e.g. Shift Click on each object)
Undo Last		Undo the most recent 'Hide' activity
Undo All		Undo all 'Hide' activities
Copy to Clipboard as Metafile		Copy the diagram to the Windows Clipboard (e.g. for subsequent pasting into a Word Document)
Show Ruler		Toggle the diagram ruler
Autolayout	Star	Auto-layout the diagram in a Star-schema style

Menu	Sub-menu	Details
	Orthogonal	Auto-layout the diagram using an Orthogonal approach
	Update Links only	Adjust the relationships lines for optimal layout
Autosize by Text Length		Resizes the Entity boxes based upon the length of the Entity name.

Creating Metadata Reports

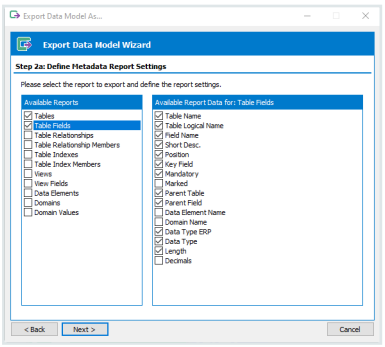
Another of the optional export formats available with the product enables the production of a metadata report in Microsoft Excel format.

To create the report, use the Export Wizard, as described above, and select the 'Metadata Report' radio button.



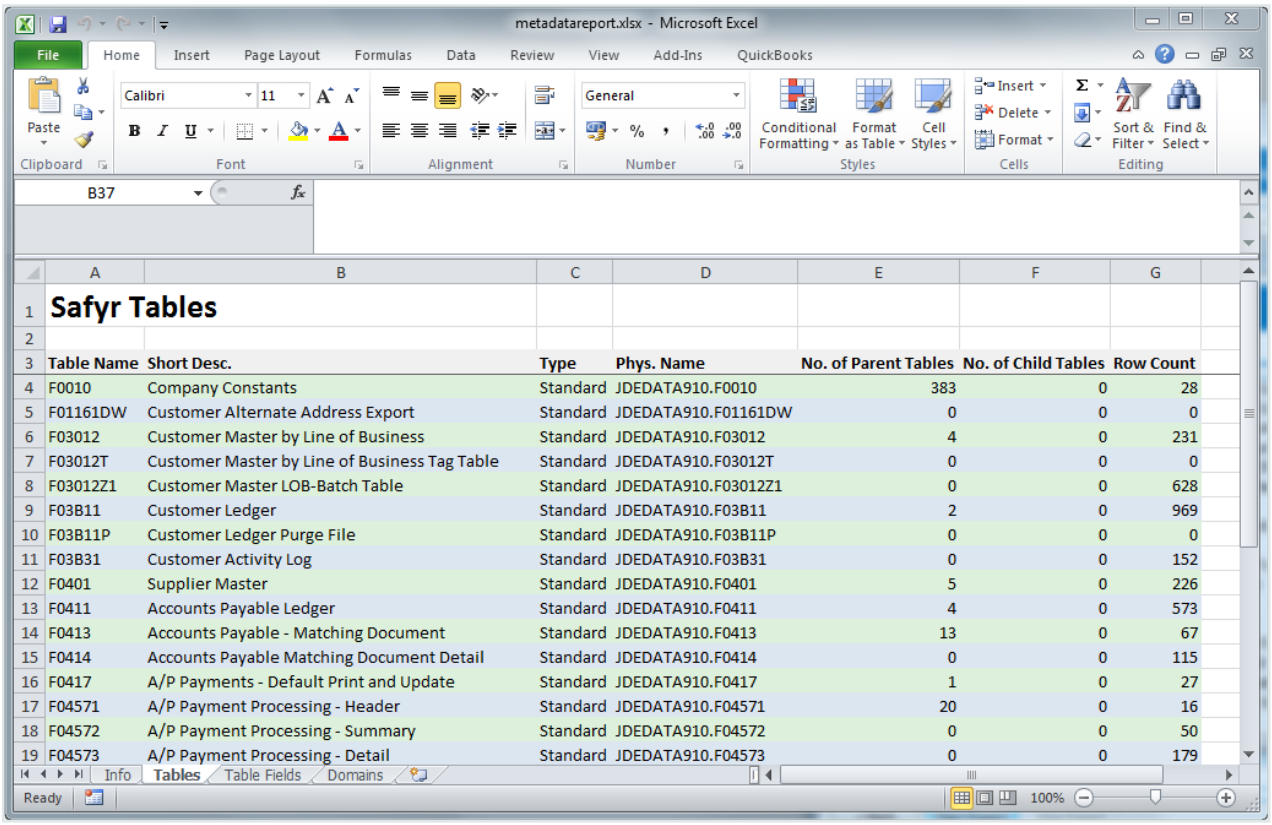
Then use the file selector to specify the location and name of the Excel spreadsheet to be created.

After clicking the 'Next' button, the Report Settings screen will be shown.



Select the Reports required using the set of check boxes in the left panel, and for each use the check boxes on the right to choose the attributes required for each type of object.

Click Next to proceed with the report creation. An Excel spreadsheet will then be created, with a separate tab for each type of report selected.



Comparing metadata

Describes how to use the ERP/CRM Integrator compare feature to identify differences between subject areas

The ERP/CRM Integrator Compare Subject Areas option enables metadata from two different ERP/CRM Integrator repositories to be reviewed and analyzed. The two systems might be different release levels, or different installations.

The feature requires the user to export one or more ERP/CRM Integrator subject areas into a special comparison file format for each of the systems to be compared. The comparison function then takes these comparison files and reports the differences via a text-based comparison report.

Two Repositories will need to be defined for the two differing sets of metadata before the comparison can take place (see Chapter: The Repository Manager for details of configuring repositories).

Creating a Comparison File

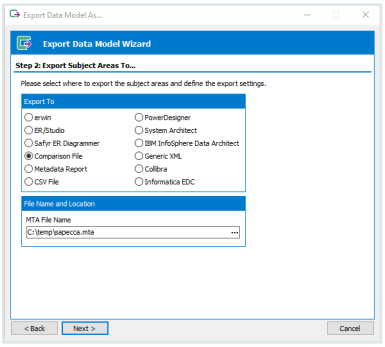
One of the 'Export To' radio buttons on the Export Wizard is 'Comparison File'. Selection of this will create a special comparison file for use by the Compare routines.

To create a comparison file, create and populate one or more ERP/CRM Integrator subject areas as per normal. Use these subject areas in the Export Wizard and check 'Comparison file' as the export format.

A file selection form will request the name and location for a .MTA file which forms the Comparison Details file.

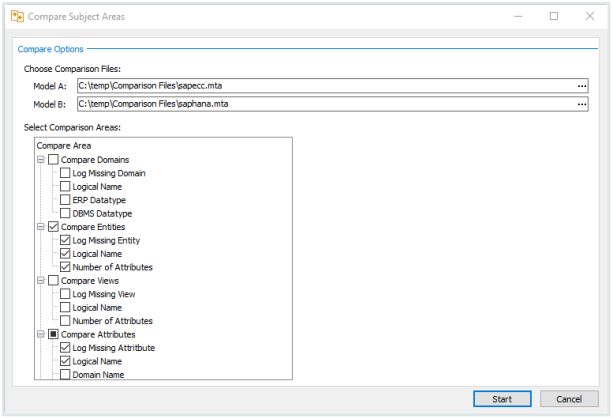
Now switch to another repository, define and export a similar subject area set. The two .MTA files will now be ready for comparison.

> **Note** The comparison result will show differences between the two systems. Identical objects will not therefore appear in the result.



Performing the Subject Area comparison

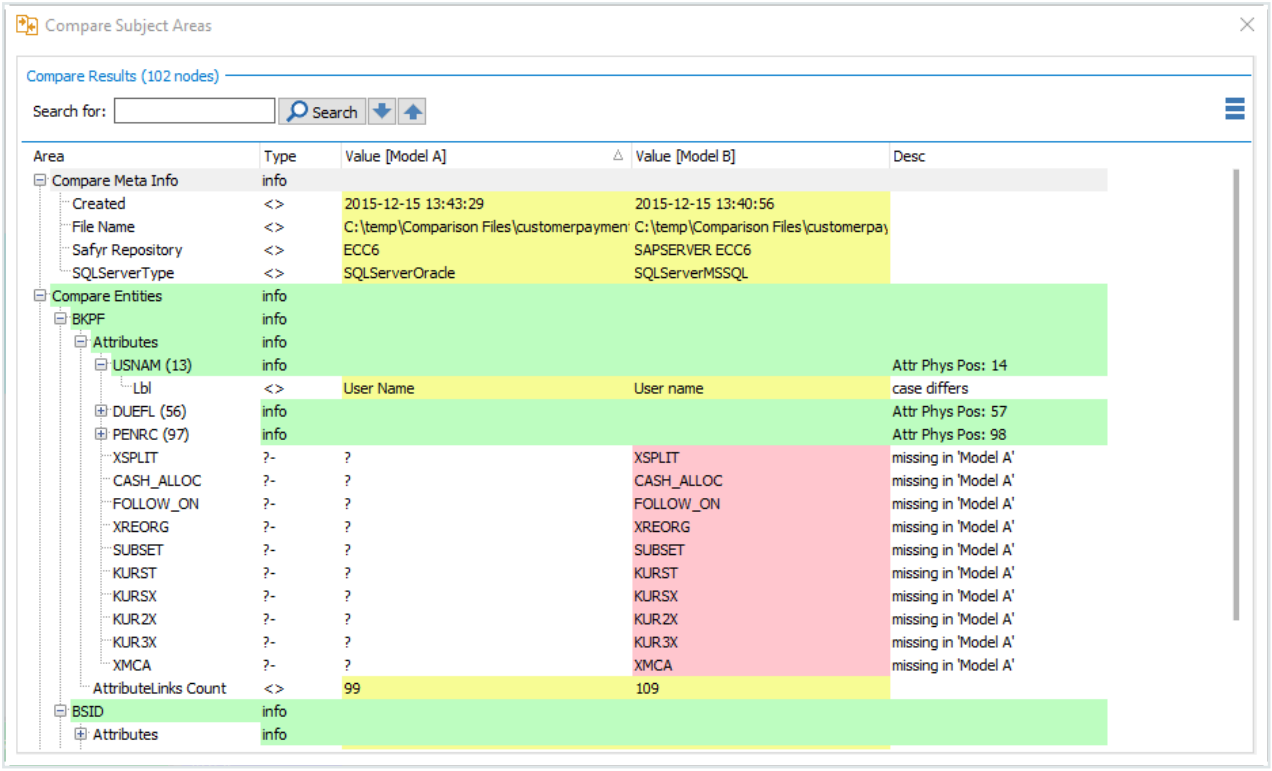
The Comparison feature is accessed from the Tools Menu, 'Compare Subject Areas'.



1. Specify the two comparison .mta files to be compared using the file selectors at the top of the form.
2. Select the relevant checkboxes in the 'Select Comparison Areas' section that reflect the model areas to be compared. These options are grouped by 'object' type (e.g. 'Compare Entities'). It may be necessary to experiment with these options to achieve the desired comparison result.
3. Click the 'Start' button to perform the comparison.

Results of a Comparison

The results of the comparison are displayed in the Compare Results window.



Area	Type	Value [Model A]	Value [Model B]	Desc
Compare Meta Info	info			
Created	<>	2015-12-15 13:43:29	2015-12-15 13:40:56	
File Name	<>	C:\temp\Comparison Files\customerpaymen	C:\temp\Comparison Files\customerpa	
Safyr Repository	<>	ECC6	SAPSERVER ECC6	
SQLServerType	<>	SQLServerOracle	SQLServerMSSQL	
Compare Entities	info			
BKPF	info			
Attributes	info			
USNAM (13)	info			Attr Phys Pos: 14
Lbl	<>	User Name	User name	case differs
DUEFL (56)	info			Attr Phys Pos: 57
PENRC (97)	info			Attr Phys Pos: 98
XSPLIT	?-	?	XSPLIT	missing in 'Model A'
CASH_ALLOC	?-	?	CASH_ALLOC	missing in 'Model A'
FOLLOW_ON	?-	?	FOLLOW_ON	missing in 'Model A'
XREORG	?-	?	XREORG	missing in 'Model A'
SUBSET	?-	?	SUBSET	missing in 'Model A'
KURST	?-	?	KURST	missing in 'Model A'
KURSX	?-	?	KURSX	missing in 'Model A'
KUR2X	?-	?	KUR2X	missing in 'Model A'
KUR3X	?-	?	KUR3X	missing in 'Model A'
XMCA	?-	?	XMCA	missing in 'Model A'
AttributeLinks Count	<>	99	109	
BSID	info			
Attributes	info			

The comparison result is presented as 5 columns:

Area		This column identifies the object being compared
Type		Describes the type of comparison result:
	Info	Indicates an information row. The differences are identified at the next subsidiary level. Highlighted in green.
	<>	Indicates that both comparison objects exist in the 2 models but have differences. Highlighted in yellow.
	?-	Object does not exist in Model A and is present in Model B. Highlighted in red.
	-?	Object does not exist in Model B and is present in Model A. Highlighted in red.
Value [Model A]	Value of Model A object	
Value [Model B]	Value of Model B object	
Desc		A supporting description of the comparison

At the top of the window is a 'Search' box for locating items in the 'Area' column. As with other search capabilities in ERP/CRM Integrator, the wild card to be used in these searches is the '*' character.

To the right of the Search box are three buttons:

- : Click this to start the search. This will always take place from the beginning of the Compare Result list
- : Click to search for the next occurance of the search term
- : Click to search backward from the current location

Expanding the icon gives access to the following options:

- **Save results to File**: To export the Comparison Result to a flat file
- **Collapse Tree**: To collapse all nodes of the comparison tree
- **Expand Tree**: To expand all nodes of the comparison tree

Special Product Features for SAP BW

Describes features in ERP/CRM Integrator that are specific to working with metadata from a SAP BW system

SAP BW is a particular type of SAP system, largely orientated around the representation of multi-dimensional 'objects' for BI purposes.. The main aim of the ERP/CRM Integrator features for a SAP BW instance is to represent BW InfoProviders and their associated data structures.

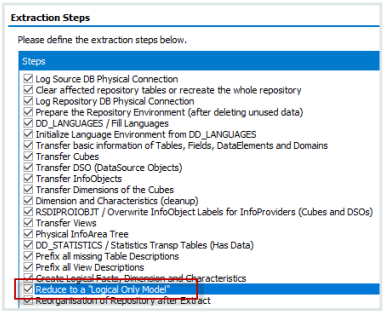
Once the metadata from a SAP BW system has been loaded into ERP/CRM Integrator, there are a number of BW-specific features that make the process of creating a Star Schema exploring easier.

Suppressing the Physical Model for a BW system

The 'physical' representation of metadata for BW objects can be complex and challenging to understand. Many ERP/CRM Integrator users will find that the 'logical' representation of the metadata is sufficient for their requirements.

The Extraction options for SAP BW (see 'Extracting metadata from SAP or SAP BW' in the ERP/CRM Integrator Getting Started Guide) include an option to retain only the 'logical' representation of the BW metadata and to remove the 'physical' metadata representations during the extraction process. This option is checked 'on' by default.

Uncheck this option at extract time if you wish to retain the physical BW metadata definitions.



The Model Overview and BW

BW metadata appears in the Model Overview in the same manner as for any other system handled by ERP/CRM Integrator with one exception, and that is the usage of Table Type.

The Table Type in a ERP/CRM Integrator BW system describes the purpose of the table. The possible values are shown in the table below.

Table	Description
BW Fact (DB)	Fact Table (Database)
BW Fact Virt (DB)	Fact Table for a Virtual-Provider (Database)
BW Dim (DB)	Dimension Table (Database)
BW Charact.SID View (DB)	A View table that acts as an intersection between a SID table and a Dimension (Database)
BW Charact. SID (DB)	Characteristic SID table (Database)
BW Charact.Master Data (DB)	Table defining the attributes of a Characteristic (Database)
BW Charact.Master Data time dep. (DB)	Table defining the attributes of a Time-dependent Characteristic (Database)
BW Charact.Text (DB)	Table defining the text attributes of a Characteristic (Database)
BW Charact.SID time indep (DB)r	Table defining a time-independent Characteristic (Database)
BW Charact.SID time dep (DB)r	Table defining a time-dependent Characteristic (Database)
BW Charact. Hierarchy (DB)	Table defining a Characteristic Hierarchy (Database)
BW Charact. Hierarchy SID (DB)	Table defining a Characteristic Hierarchy SID (Database)
BW Charact. SID Hierarchy Struct (DB)	Table defining a Characteristic SID Hierarchy Structure (Database)
BW DSO (DB)	A DSO table (Data Store Object) (Database)
BW Cube	A ‘virtual’ table that presents a Logical view of a BW Cube

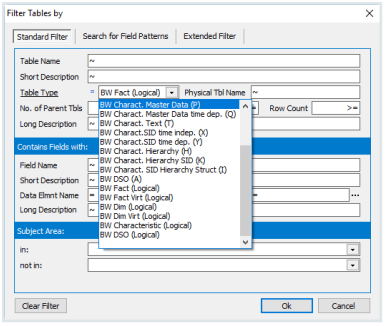
Table	Description
BW Cube Virt	A ‘virtual’ table that presents a Logical view of a Virtual Provider
BW Characteristic	A ‘virtual’ table that presents a Logical view of a Characteristic
BW DSO	A ‘virtual’ table that represents a Logical view of a DSO
BW Query	A ‘virtual’ table that represents a BW Query
BW InfoSource	A 'virtual' table that represents a BW InfoSource
BW DataSource	A 'virtual' table that represents a BW DataSource
BW Open Hub Destination	A 'virtual' table that represents a BW Open Hub Destination
BW Aggregation Level	A 'virtual' table that represents a BW Aggregation Level

In addition, for HANA-based SAP BW system:

Table	Description
BW Adv. DSO	A 'virtual' table that represents a Logical view of an Advanced DSO
BW Composite Provider	A 'virtual' table that represents a HANA Composite Provider
BW Open ODS View	A 'virtual' table that represents an Open ODS View

Using Advanced Search to select BW Table types

The Advanced Search feature ‘Standard filter’ tab (see Chapter: Browsing the metadata in ERP/CRM Integrator - for more details), has a Table Type dropdown list that, for a BW system, displays the possible Table Types listed in the table above.



The Table Type selection can be used in combination with any of the other search features to limit the range of tables displayed in the Model Overview.

The Application Hierarchy and BW

There are potentially three Application Hierarchies created in ERP/CRM Integrator for BW.

These are:

- **Logical InfoArea Tree**: This tree shows the hierarchy of InfoAreas with the ‘virtual’ BW 'objects' as the lowest node level.
- **Physical InfoArea Tree**: This tree shows the hierarchy of InfoAreas with the ‘physical’ BW 'objects' as Fact tables (F prefix) as the lowest node level.
- **Logical Application Component Tree**: This tree shows DataSources (for BW Classic and BW HANA systems) and InfoSources, (for BW Classic systems only) grouped by Application Component

> **Note** The Physical InfoArea Tree will not be present if the Extraction option to remove the ‘Physical’ BW metadata was used (see ‘Suppressing the Physical Model for a BW system’ above).

Choosing which Hierarchy to Use

The purpose of the two hierarchies for BW is to aid in the location of the 'objects' that will be the focus of the required Subject Area. If the Subject Area is to show a ‘physical’ representation of a cube, with all the tables that are involved, then the Physical InfoArea Tree is the one to use.

If the Subject Area is to be a 'logical' representation of objects, then Logical InfoArea Tree would be the start point.

And if the focus of the Subject Area is around DataSource and InfoSources, then the Application Component Tree is a good starting point.

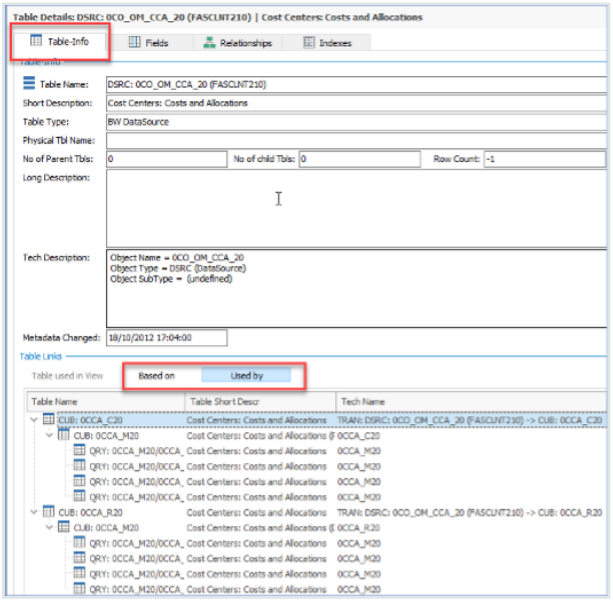
Lineage for BW

An important aspect of understanding the metadata in a SAP BW system is to reveal the 'lineage' of data as it flows through the BW system.

Safyr shows this lineage information using options on the 'Table-Info' tab.

The 'Based on' tab will show any BW objects that are the basis of the current object (e.g. A Query based on a Cube)

The 'Used by' tab will show any BW objects that utilize the current object (e.g. A Cube used by a Query)



The 'Based-on' and 'Used by' tabs display a hierarchy of 'lineage' levels.

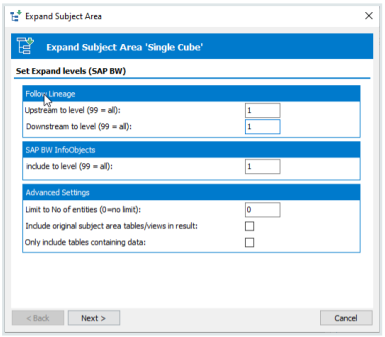
In the example above, Cube 0CCA_C20 is Used by Cube 0CCA_M20 which is subsequently used by 4 Queries.

Using the Expand feature to extend a BW Subject Area

When building a Subject Area in ERP/CRM Integrator for a SAP BW system, including the 'Lineage' for BW 'objects' is often a goal. To facilitate this, ERP/CRM Integrator has special features to make it easier to decide which 'lineage' objects to include.

ERP/CRM Integrator uses the terms 'Upstream' and 'Downstream' to explain the flow of data through a BW system. For example, a BW Query is 'downstream' from an ADSO because the data 'flows' from the ADSO to the Query. Conversely, a DataSource is 'upstream' from an ADSO because the data flows from the DataSource to the ADSO.

Using this approach, a Subject Area can be Expanded to include Upstream and Downstream objects to a specified level to get a clear and consistent representation of BW metadata.



Possible Settings are: -

- Follow Lineage Upstream to level: This option will include any BW Objects 'upstream' of each member in the Subject Area chosen. The level number dictates how many levels to include. '1' indicates one level upstream, '2' would indicate 2 levels and so on.
- Follow Lineage Downstream to Level: This option will include any BW Objects 'down-stream' of each member in the Subject Area. The level number dictates how many levels to include. '1' indicates one level downstream, '2' would indicate 2 levels and so on.
- SAP BW InfoObjects: The level number dictates how many levels to include. '1' indicates one level upstream, '2' would indicate 2 levels and so on.
- Limit No of entries: This option will limit the number of Tables exported to the specified number. Zero indicates there is no limit.

- Include original Subject Area tables/views in result: The set of tables in the Subject Area that are used as the basis of finding related tables will also be included in the result set if this option is selected.
- Only include tables containing data: The set of tables resulting from the search will be restricted to those that have a Row Count greater than zero.

After setting the options described above, clicking the 'Next' button will start the process of assembling the related table list. The resulting set of tables are then displayed.

See 'Expanding a Subject Area with related Parent or Child tables' above for more details of the Expand feature.

Appendix A. - The ERP/CRM Integrator Meta Model

Below are descriptions of the Tables that make up the ERP/CRM Integrator Meta Model. Each table is briefly described, the attributes listed and comments provided where applicable.

Table Name: DD_DATAELEMENT

Definition: A data element is a definition of an attribute, independent of an entity

Table Column Name	Table Column Comment
DD_ DATAELEMENTNAME	Data Element Name
DD_DOMAINNAME	Parent Domain Name
DD_ORIGIN	Possible Values – E –from ERP, GE – Generic Element (generated by ERP/CRM Integrator)
TEMP_EXTRACT_INFO1	
TECH_DESC	

Table Name: DD_DATAELEMENT_DESC

Definition: The descriptive text for a Data Element

Table Column Name	Table Column Comment
DD_DATAELEMENTNAME	Data Element Name
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
LOGICAL_UNIQUENAME	
LONG_DESC	

Table Name: DD_DOMAIN

Definition: A Domain is a generic definition of an Attribute type

Table Column Name	Table Column Comment
DD_DOMAINNAME	Domain Name
DD_DATATYPE	Logical Datatype
DD_DATATYPE_ERP	ERP-specific Datatype
DATA_LENGTH	Datatype length
DATA_DECIMALS	Datatype Decimals
DD_LOOKUP_ ENTITYNAME	Name of the associated Entity Lookup table
DD_ORIGIN	Possible Values – E –from ERP, GD – Generic Domain (generated by ERP/CRM Integrator)
TEMP_EXTRACT_INFO1	
TECH_DESC	

Table Name: DD_DOMAIN_DESC

Definition: The descriptive text for a Domain

Table Column Name	Table Column Comment
DD_DOMAINNAME	Domain Name
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
LOGICAL_UNIQUENAME	
LONG_DESC	

Table Name: DD_DOMAINVALUE

Definition: A set of fixed values associated with a Domain

Table Column Name	Table Column Comment
DD_DOMAINNAME	Domain Name
DD_DOMAINVALUE_KEY	Domain Value Key
POSIT	
TECH_DESC	

Table Name: DD_DOMAINVALUE_DESC

Definition: The descriptive text for a Domain value

Table Column Name	Table Column Comment
DD_DOMAINNAME	Domain Name
DD_DOMAINVALUE_KEY	Domain Value Key
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
LONG_DESC	

Table Name: DD_FIELD

Definition: A Field is an attribute belonging to a Table

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_FIELDNAME	Field Name
POSIT	
KEY_FLAG	Indicates a Primary Key field – Possible values are 'Y' or 'N'
MANDATORY	Indicates if Field is Mandatory – Possible values are 'Y' or 'N'
DD_DATAELEMENTNAME	Parent Data Element Name

Table Column Name	Table Column Comment
DD_DOMAINNAME	Parent Domain Name
DD_PARENT_TABLENAME	Where the Fields is a Foreign Key, the Parent Table Name
DD_PARENT_FIELDNAME	Where the Fields is a Foreign Key, the Parent Field Name
DD_FLDGRPNAME	Only relevant to BW systems - Field Group that the Field belongs to
TEMP_EXTRACT_INFO1	
TEMP_EXTRACT_INFO2	
TECH_DESC	

Table Name: DD_FIELD_DESC

Definition: The descriptive text for a Field

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_FIELDNAME	Field Name
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
LOGICAL_UNIQUENAME	
LONG_DESC	

Table Name: DD_FIELDGRP

Definition: A Field Group is normally only used for SAP BW systems.

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_FIELDGRPNAME	Field Group Name

Table Column Name	Table Column Comment
POSIT	

Table Name: DD_FIELDGRP_DESC

Definition: The descriptive text for a Field Group

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_FIELDGRPNAME	Field Group Name
DD_LANGUAGE_ID	Language Code
SHORT_DESC	

Table Name: DD_INDEX

Definition: An Index is a definition of a database index for a Table

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_INDEXNAME	Index Name
DD_INDEXTYPE	The Index Type – A for Alternate, I for Inversion Entry, P for Primary Key Index
TECH_DESC	

Table Name: DD_INDEX_DESC

Definition: The descriptive text for an Index

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_INDEXNAME	Index Name
DD_LANGUAGE_ID	Language Code

Table Column Name	Table Column Comment
SHORT_DESC	
LONG_DESC	

Table Name: DD_INDEXITEM

Definition: An Index Item is a definition of a field that belongs to an Index

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_INDEXNAME	Index Name
POSIT	
DD_FIELDNAME	
DESCENDING	Indicates if Index Item is a Descending Index Item – possible values are 'Y' or 'N'

Table Name: DD_LANGUAGE

Definition: A definition of a Language for descriptive text fields

Table Column Name	Table Column Comment
DD_LANGUAGE_ID	Language Code
SHORT_DESC	

Table Name: DD_RELATIONSHIP

Definition: A Relationship defines a link between two tables

Table Column Name	Table Column Comment
DD_ RELATIONSHIP_ID	Relationship Id

Table Column Name	Table Column Comment
DD_PARENT_ TABLENAME	Parent Table Name
DD_CHILD_ TABLENAME	Child Table Name
DD_RELATTYPE	The Relationship Type. I – for Identifying, N for Non-Identifying
DD_CARDINALITY	The Relationship Cardinality. Possible values are: ZM - Zero, one or more 1M - One or more Z1 - Zero or 1 E1 - Exact 1
DD_ORIGIN	The origin of the Relationship. Possible values are 'E' – from the ERP, 'XR' – Extended relationship, 'RR' – Rules Based relationship
TEMP_EXTRACT_ INFO1	
TECH_DESC	

Table Name: DD_RELATIONSHIP_DESC

Definition: The descriptive text for a Relationship

Table Column Name	Table Column Comment
DD_RELATIONSHIP_ID	Relationship Id
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
LONG_DESC	

Table Name: DD_RELATIONSHIPITEM

Definition: A relationship Item is a definition of a Field that belongs to a Relationship

Table Column Name	Table Column Comment
DD_RELATIONSHIP_ID	Relationship Id
POSIT	
DD_PARENT_TABLENAME	The Parent Table for the Relationship
DD_PARENT_FIELDNAME	The Parent Field for the Relationship Item
DD_CHILD_TABLENAME	The Child Table for the Relationship
DD_CHILD_FIELDNAME	The Child Field for the Relationship Item
DD_CHILD_FIELDVALUE_FIXED	Where the Relationship Item is to a 'fixed' value, the fixed value
TECH_DESC	

Table Name: DD_SUBJECTAREA

Definition: A Subject Area is a grouping of Tables and/or Views

Table Column Name	Table Column Comment
DD_SUBJECTAREA_ID	Subject Area Id
DD_SUBJECTAREANAME	
UPDATE_USER	The Windows User that last updated the Subject Area
UPDATE_DATETIME	The Date a& Time the Subject Area was last updated
CREATION_USER	The Windows User that created the Subject Area
CREATION_DATETIME	The Date a& Time the Subject Area was created
REMARK	Free format text to describe the Subject Area

Table Name: DD_SUBJECTAREA_MK_FIELD

Definition: A Marked Field indicates that a Table Field belongs to the designated Subject Area.

Table Column Name	Table Column Comment
DD_SUBJECTAREA_ID	Subject Area Id
DD_TABLENAME	Table Name
DD_FIELDNAME	Field Name

Table Name: DD_SUBJECTAREA_MK_VFIELD

Definition: A Marked Field indicates that a View Field belongs to the designated Subject Area.

Table Column Name	Table Column Comment
DD_SUBJECTAREA_ID	Subject Area Id
DD_VIEWTYPE	Determined by the ERP type
DD_VIEWNAME	View Name
DD_VIEWFIELDNAME	View Field Name

Table Name: DD_SUBJECTAREA_TABLE

Definition: An intersect table between a Subject Area and a Table

Table Column Name	Table Column Comment
DD_SUBJECTAREA_ID	Subject Area Id
DD_TABLENAME	Table Name

Table Name: DD_SUBJECTAREA_VIEW

Definition: An intersect table between a Subject Area and a View

Table Column Name	Table Column Comment
DD_SUBJECTAREA_ID	Subject Area Id
DD_VIEWTYPE	Determined by the ERP type
DD_VIEWNAME	View Name

Table Name: DD_TABLE

Definition: A table is a definition of a database Base Table

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_TABLETYPE	The Table Type – T – Transparent, P – Pool, C – Cluster (P & C values are only relevant to SAP).
PHYSICAL_TABLENAME	Physical Table Name
NUMBER_OF_PARENT_TABLES	
NUMBER_OF_CHILD_TABLES	
HAS_DATA	Row Count, if available
TEMP_EXTRACT_INFO1	
TEMP_EXTRACT_INFO2	
TECH_DESC	

Table Name: DD_TABLE_DESC

Definition: The descriptive text for a Table

Table Column Name	Table Column Comment
DD_TABLENAME	Table Name
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
LOGICAL_UNIQUENAME	
LONG_DESC	

Table Name: DD_TREE

Definition: A definition of a Tree Type for the Application Hierarchy

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_ROOTNODE_ID	

Table Name: DD_TREE_DESC

Definition: The descriptive text for a Tree type

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_LANGUAGE_ID	Language Code
SHORT_DESC	

Table Name: DD_TREENODE

Definition: A definition of a Tree Node within the Application Hierarchy

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_TREENODE_ID	
DD_ TREENODECLASS_ID	
HAS_CHILDNODES	Indicates if there are Nodes below current level – possible values are 'Y' or 'N'
HAS_TREENODE_ TABLES	Indicates if there are Nodes containing Tables associated with this Node – possible values are 'Y' or 'N'
HAS_TREENODE_ VIEWS	Indicates if there are Nodes containing Views associated with this Node – possible values are 'Y' or 'N'
TEMP_EXTRACT_ INFO1	

Table Column Name	Table Column Comment
TEMP_EXTRACT_INFO2	

Table Name: DD_TREENODE_DESC

Definition: The descriptive text for a Tree Node

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_TREENODE_ID	Tree Node Id
DD_LANGUAGE_ID	Language Code
SHORT_DESC	

Table Name: DD_TREENODE_TABLE

Definition: An intersect between a Tree Node and a Table

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_TREENODE_ID	Tree Node Id
DD_TABLENAME	Table Name

Table Name: DD_TREENODE_VIEW

Definition: An intersect between a Tree Node and a View

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_TREENODE_ID	Tree Node Id
DD_VIEWTYPE	Determined by the ERP Type
DD_VIEWNAME	View Name

Table Name: DD_TREENODECLASS

Definition: A classification of a Tree Node

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_TREENODECLASS_ID	Tree Node Class Id
ICON_ID	Indicates the type of icon to be used for this Tree Node Class
DELETEIFHASNOCHILDS	Should this Tree Node type be deleted if there are no levels below it. Possible values are 'Y' or 'N'

Table Name: DD_TREENODECLASS_DESC

Definition: The descriptive text for a Tree Node Class

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_TREENODECLASS_ID	Tree Node Class Id
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
DESC_SUFFIX	

Table Name: DD_TREESTRUCT

Definition: The link between a Parent and Child Node in a Tree

Table Column Name	Table Column Comment
DD_TREE_ID	Tree Id
DD_PARENTNODE_ID	Id of Parent Node
DD_CHILDNODE_ID	Id of Child Node
TEMP_EXTRACT_INFO1	

Table Name: DD_VIEW

Definition: Details of each View (a View can be a Database View, or an 'abstracted view')

Table Column Name	Table Column Comment
DD_VIEWTYPE	Determined by the ERP Type
DD_VIEWNAME	View Name
TEMP_EXTRACT_INFO1	
TECH_DESC	

Table Name: DD_VIEW_DESC

Definition: The descriptive text for a View

Table Column Name	Table Column Comment
DD_VIEWTYPE	Determined by the ERP Type
DD_VIEWNAME	View Name
DD_LANGUAGE_ID	Language Code
SHORT_DESC	
LOGICAL_UNIQUENAME	
LONG_DESC	

Table Name: DD_VIEWFIELD

Definition: A View Field is an attribute of a View

Table Column Name	Table Column Comment
DD_VIEWTYPE	Determined by the ERP Type
DD_VIEWNAME	View Name
DD_VIEWFIELDNAME	View Field Name

Table Column Name	Table Column Comment
POSIT	
DD_VIEWFIELDTYPE	The View Field type. Possible values are: UK -Undefined TB – maps to a Table VW – maps to another View CL – Calculated Field
DD_TABLENAME	Table Name
DD_FIELDNAME	Field Name
DD_PARENT_VIEWTYPE	(For a future release of ERP/CRM Integrator)
DD_PARENT_VIEWNAME	Where a View Field is based upon another View, the View Name of that Parent
DD_PARENT_ VIEWFIELDNAME	Where a View Field is based upon another View, the View Field Name of that Parent
DD_DATAELEMENTNAME	Parent Data Element Name
TEMP_EXTRACT_INFO1	
TECH_DESC	

Table Name: DD_VIEWFIELD_DESC

Definition: The descriptive text for a View Field

Table Column Name	Table Column Comment
DD_VIEWTYPE	Determined by the ERP Type
DD_VIEWNAME	View Name
DD_VIEWFIELDNAME	View Field Name
DD_LANGUAGE_ID	Language Code
SHORT_DESC	

Table Column Name	Table Column Comment
LOGICAL_UNIQUENAME	
LONG_DESC	

Appendix B. - Adding Additional Relationships

Details of the ERP/CRM Integrator features for creating additional relationships based upon a series of spreadsheet-based rules and inference rules

ERP/CRM Integrator creates relationships for a PeopleSoft system by looking at the relationships defined in the PeopleSoft data dictionary. However, there are a number of relationships not explicitly defined in these tables.

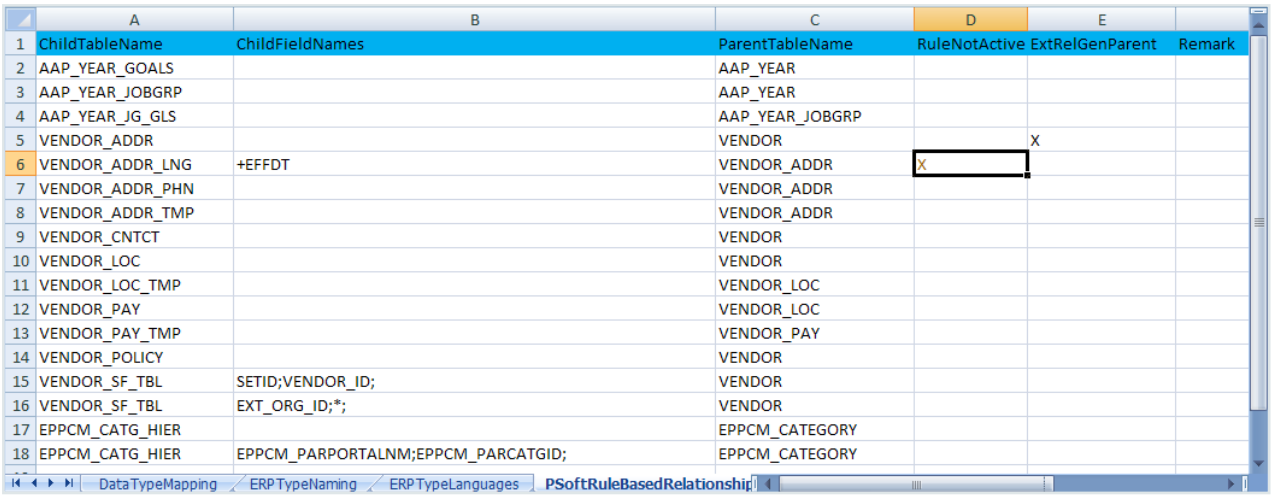
For a JDEdwards system, there are no relationships explicitly defined in the Data Dictionary. For both of these environments, ERP/CRM Integrator users can extend the relationships extracted from the ERP by defining relationship creation rules in the SafyrSettings.xlsx spreadsheet. ERP/CRM Integrator refers to these relationships as 'Rule Based Relationships'. Whilst SAP has a large complement of defined relationships, in some of the newer SAP modules, some of the expected relationships are absent from the data dictionary, and so ERP/CRM Integrator also has the capability to allow 'rule based relationships' to be defined for a SAP system.

In addition, ERP/CRM Integrator has an inference process which can create relationships for SAP, PeopleSoft and JDEdwards. ERP/CRM Integrator refers to these as 'Extended Relationships'.

The following sections describe these features in detail.

Understanding the PeopleSoft , JDEdwards and SAP rules spreadsheets

The SafyrSettings.xlsx Excel spreadsheet is located in the ERP/CRM Integrator installation folder (normally \<Program Files>\Silwood\ERP/CRM Integrator 7\). There are three sheets in the spreadsheet for influencing the relationship creation process: PSoftRuleBasedRelationships for PeopleSoft, JDEDRuleBasedRelationships for JDEdwards and SAPRuleBasedRelationships for SAP. The PeopleSoft rules sheet has a layout as shown in the following example. The JDEdwards and SAP sheets have an identical layout.



	A	B	C	D	E	
1	ChildTableName	ChildFieldNames	ParentTableName	RuleNotActive	ExtRelGenParent	Remark
2	AAP_YEAR_GOALS		AAP_YEAR			
3	AAP_YEAR_JOBGRP		AAP_YEAR			
4	AAP_YEAR_JG_GLS		AAP_YEAR_JOBGRP			
5	VENDOR_ADDR		VENDOR		X	
6	VENDOR_ADDR_LNG	+EFFDT	VENDOR_ADDR	X		
7	VENDOR_ADDR_PHN		VENDOR_ADDR			
8	VENDOR_ADDR_TMP		VENDOR_ADDR			
9	VENDOR_CNTCT		VENDOR			
10	VENDOR_LOC		VENDOR			
11	VENDOR_LOC_TMP		VENDOR_LOC			
12	VENDOR_PAY		VENDOR_LOC			
13	VENDOR_PAY_TMP		VENDOR_PAY			
14	VENDOR_POLICY		VENDOR			
15	VENDOR_SF_TBL	SETID;VENDOR_ID;	VENDOR			
16	VENDOR_SF_TBL	EXT_ORG_ID;*;	VENDOR			
17	EPPCM_CATG_HIER		EPPCM_CATEGORY			
18	EPPCM_CATG_HIER	EPPCM_PARPORTALNM;EPPCM_PARCATGID;	EPPCM_CATEGORY			

DataTypeMapping | ERPTypeNaming | ERPTypeLanguages | PSoftRuleBasedRelationship

The spreadsheet columns are as follows:

- **ChildTableName**: The name of the Child table for the relationship.
- **ChildFieldNames**: See 'Defining a Rule' below for details of the possible values.
- **ParentTableName**: The name of the Parent table for the relationship.
- **RuleNotActive**: If blank, then the rule is active. If 'X' then the rule will be ignored.
- **ExtGenRelParent**: Used by the Extended Relationship generation process (See 'Influencing the Extended Relationship generation process for PeopleSoft and JDEdwards relationships' below for details).
- **Remark**: A free-format comment area for entry of optional notes describing the rule

When the PeopleSoft, JDEdwards or SAP Extraction process is run (see 'Extracting metadata from PeopleSoft Enterprise', 'Extracting metadata from JDEdwards EnterpriseOne' or 'Extracting metadata from SAP' in the ERP/CRM Integrator Getting Started Guide), if the user has elected to include Rules-based relationships, each entry in this sheet is processed and a relationship added (subject to the details being correct).

Special Considerations for PeopleSoft Relationships

Many PeopleSoft tables have fields EFFDT, EFFSEQ and SETID, which have particular purposes in the PeopleSoft architecture. ERP/CRM Integrator will ignore these fields when building a relationship as they are not truly part of a logical relationship between tables.

Defining a Rule

To define a new rule, decide which tables the relationship is to be between. Then add a new row to the spreadsheet, enter the name of the Parent table in the ParentTableName and the name of the Child table in the ChildTableName. The content of the ChildFieldNames will depend upon the nature of the relationship. Possible values for ChildFieldNames are as follows:

Leave blank to have a relationship built matching all the Primary Key attributes of the Parent Table with correspondingly-named attributes in the Child Table.

> **Note** For a PeopleSoft system, this will exclude fields named EFFDT, EFFSEQ and SETID – see 'Special Considerations for PeopleSoft relationships' above).

- **MYFIELD1;MYFIELD2**: A list of the child field names that the Parent Primary Key fields are to be matched with. The field names must be in the same order as the Primary Key fields in the parent table.

  > **Note** For a PeopleSoft system, the optional fields EFFDT, EFFSEQ and SETID cannot be specified.

- ***;;MYFIELD3** *** or ;;**: define fields within the parent table that do not have a corresponding field in the child table.
- **'X';MYFIELD2** **'X'** (any simple string can be used): is a fixed value in the Parent table not having a corresponding field in the child table
- **+REPLLAST;MYROLENAME;**: Uses the default field mapping between Parent and Child fields but replaces the last field name in with the field MYROLENAME.
- **+EFFDT**: Only applicable to PeopleSoft - EFFDT will be included explicitly in the relationship
- **+EFFSEQ**: Only applicable to PeopleSoft - EFFSEQ will be included explicitly in the relationship
- **+SETID**: Only applicable to PeopleSoft - SETID will be included explicitly in the relationship

Examples of using the rules:

Example
1) RoleNames
'Parent' table with Primary Key fields ParentA, ParentB, ParentC. 'Child' table fields of ChildA,ChildB,ChildC.

To form a relationship where ParentA maps to ChildA, ParentB to ChildB and ParentC to ChildC the ChildFieldNames would contain:

ChildA;ChildB;ChildC

Example
2) Partial-Relationships
Same Parent and Child tables as example (1) but the relationship is to be formed from ParentA mapping to ChildA and ParentC to ChildC. In this case the ChildFieldNames would contain:

ChildA;*;ChildC (ChildA;;ChildC would have the same result)

Example
3) Last-Attribute-Rolenamed
'Parent' table with Primary Key fields AAA, BBB, CCC. 'Child' table fields of AAA, BBB, TTT.

To form a relationship where AAA maps to AAA, BBB to BBB and CCC to TTT the ChildFieldNames would contain:

+REPLAST;TTT

Example
4) Include-optional-Attributes
Parent' table with Primary Key fields SETID, BBB. 'Child' table fields of SETID, BBB.

To form a relationship where SETID maps to SETID and BBB to BBB the ChildFieldNames would contain:

+SETID

Adding rules to the spreadsheet

ERP/CRM Integrator users may want to add rules to the spreadsheet in order to create additional relationships in the ERP/CRM Integrator repository.

There are two options for locating the version of the spreadsheet that is to be changed by adding these relationships:

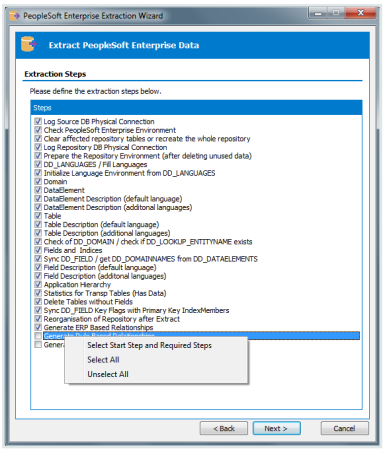
- Copy the SafyrSetting.xlsx and use this to create a copy named SafyrSettings_Cust.xlsx in the ERP/CRM Integrator installation folder. Then add the required rules to this SafyrSettings_Cust.xlsx spreadsheet.
  When the ERP/CRM Integrator application is started, if the file SafyrSettings_Cust.xlsx exists, then this will be used instead of the delivered SafyrSetting.xlsx file.
- Locate the SafyrSettings.xlsx in the same location as the ERP/CRM Integrator .ini file (see 'the repository .ini file location' in the Chapter : The Repository Manager).

When the ERP/CRM Integrator application is started, if SafyrSettings.xlsx exists in the same location as the .ini file, then this will be used instead of the delivered SafyrSetting.xlsx file.

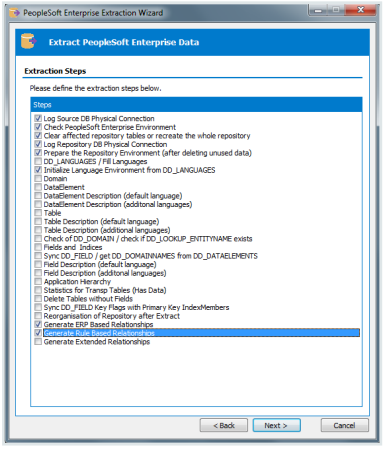
Running an update to process new rules

Rules added to the spreadsheet are actioned by running the ERP Extraction process. However, it is not necessary to run the entire extraction of metadata each time, the extraction options can be set to only process the relationship creation elements of the extraction process.

From the Extraction Steps screen of the PeopleSoft, JDEdwards or SAP Extraction Wizard, check the 'Generate Rules Based Relationships' checkbox and then Right Mouse Click. Now choose 'Select Start Step and Required Steps'



This will set all the necessary steps for the extraction process to process the Rules. Now proceed with the extraction as normal.



What happens if a spreadsheet rule conflicts with an Existing Relationship?

If at least one rule-based relationships is identifying for a child-table, than all other identifying relationships (ERP-derived or Extended) are removed for that child-table.

This is an implicit 'Delete' function to allow an existing relationship to be replaced by a user-defined rule.

Method for Generating Extended Relationships

This 'Extended Relationship' process involves an automatic search for possible pairings of Primary and Foreign Keys. The process involves up to 6 passes through the ERP/CRM

Integrator Repository. For SAP, only pass 1 is applicable. For PeopleSoft Enterprise, only the first 3 passes are applicable, and J.D. Edwards EnterpriseOne systems will require all 6 passes

Pass 1: identifying relationships

The first phase, involves selecting all Tables with at least 2 Primary Key Fields (for SAP, where the first Primary Key field has the physical name of 'MANDT', or for PeopleSoft where the first Primary Key field has the physical name of 'SETID', the selection will be for at least 3 Primary Key Fields). The last field in the Primary Key must not be part of any existing Relationship. These form the set of potential 'Child Tables' for identifying relationships.

For each of the tables in this set, a search is made for a match of 'all the Primary Key-Fields minus the last Primary Key field' for a parent table with the same set and order of fields. These are potential Parents of a 1:N-identifying relationship.

In addition to the above criteria:

- For SAP and PeopleSoft: only Parents with existing 'Children' are selected.
- For J.D. Edwards EnterpriseOne: only Parent-Child-Relationships that are represented by a join in the EnterpriseOne 'Business Views' are considered.

Given the above criteria, if exactly 1 Parent is found, then a relationship is added.

If more than 1 potential parent is found then:

- For SAP: the parent table showing to the Default Domain Lookup Table is selected. If the 'potential parent' already has its own 'Parent' based upon the same 'field set' then this same relationship is also applied to the child (For example if Table A is already a parent to Table B and a potential child table (Table C) to Table B is found with the same potential foreign key, then Table C is made a child of Table A, not Table B.
- For J.D. Edwards EnterpriseOne: if the first 3 Characters of the Table Names of the two tables correspond then this Parent is chosen.
- For PeopleSoft:: reference is made to the 'PSOFTHINTS' area of the ERP/CRM Integrator.ini file to see if there is a preferred parent listed (see the section 'Influencing the generation of additional PeopleSoft relationships' below). If no 'parent' is found in the .ini file, then the first of the available potential parents is chosen.

These steps are then repeated for smaller sets of Primary Key-Fields down to:

- J.D Edwards EnterpriseOne: 1 Field.
- SAP: If Primary Key-Field 1 is MANDT then MANDT plus 1 Field, otherwise 1 Field.
- PeopleSoft: If Primary Key-Field 1 is SETID then SETID plus 1 Field, otherwise 1 Field.

Pass 2: identifying relationships (PeopleSoft & J.D. Edwards EnterpriseOne only)

This is the same as Pass 1 but:

- For J.D.Edwards EnterpriseOne: the requirement for there to be a corresponding join in the Business Views is dropped and instead only Parent tables with existing Child tables are considered.
- For PeopleSoft: only Parent tables that were found as 'Child' tables in Pass 1 are considered as new potential 'Parents', and with only 1 level of difference between the Primary Key and potential Foreign Key attributes.

Pass 3: identifying relationships (PeopleSoft & J.D. Edwards EnterpriseOne only)

This is the same as Pass 2 but:

- For J.D.Edwards EnterpriseOne: allows any order of the attributes in the Parent-to-Child Relationship.
- For PeopleSoft Enterprise: no restriction on the number of levels of difference between the Primary Key and potential Foreign Key attributes.

Pass 4: 'Dimension' search (J.D. Edwards EnterpriseOne only)

A search is made for all Tables with just 1 Primary Key (typically those tables that would form the dimensions in a data warehouse).

Then a search for potential child tables is made by searching all tables for fields with the same Role Name as the potential Dimension-Master-Table Primary Key.

A relationship is then added only if the two tables being considered are used in the same 'Business View'.

Pass 5: 'Dimension' search (J.D. Edwards EnterpriseOne only)

A search for all Tables with just 1 Primary Key that are already part of an existing relationship is made (these will be based on relationships generated by previous passes).

Child tables are then selected in the same way as for pass 4, but the need for a join to exist in the Business View between the two tables being considered is replaced with a match between the first 3 letters of the two table names involved (for example F0111 and F0112 would be a match).

Pass 6: 'Dimension' search (J.D. Edwards EnterpriseOne only)

A search is made for all Tables with just 1 Primary Key and having an existing relationship (these will be based upon relationship generated by previous passes.)

A select of child tables is made, similar to in pass 4, but without the restriction on there needing to be a join in the Business Views for the two tables.

Influencing the Extended Relationship generation process for PeopleSoft and JDEdwards relationships

When inferring relationships for PeopleSoft Enterprise and JDEdwards, there are often circumstances where there is more than one potential 'parent' table for a relationship. Users can influence the relative importance of a table by making entries in the SafyrSettings.xlsx file (see Appendix B of the ERP/CRM Integrator 'Getting Started Guide' for details of the SafyrSettings.xlsx file).

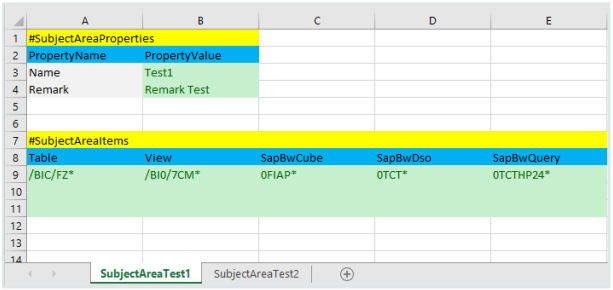
The worksheets 'PSoftRuleBasedRelationships' and 'JDEDRuleBasedRelationships' contain a column named ExtRelGenParent where a Table Name can be recorded. The generation rule is that if there is more than one potential Parent for a relationship, the inference process will use this list to help determine which to use.

Appendix C. - Using an Excel spreadsheet to load Subject Areas

Details of an Excel spreadsheet structure that can be used to populate one or more Subject Areas

ERP/CRM Integrator users may have lists of tables that they want to use as the basis for populating Subject Areas. A simple Excel structure is available with ERP/CRM Integrator to enable such lists to be imported.

A sample of the Excel file format is provided in the ERP/CRM Integrator Documentation folder.



	A	B	C	D	E
1	#SubjectAreaProperties				
2	PropertyName	PropertyValue			
3	Name	Test1			
4	Remark	Remark Test			
5					
6					
7	#SubjectAreaItems				
8	Table	View	SapBwCube	SapBwDso	SapBwQuery
9	/BIC/FZ*	/BI0/7CM*	0FIAP*	0TCT*	0TCTHP24*
10					
11					
12					
13					
14					

SubjectAreaTest1 SubjectAreaTest2

When the Subject Area is created from the Excel sheet, the Subject Area Name and Description will be based upon the Name and Remark entered at the top of the sheet.

The ‘Type’ property can have values of ‘Replace’ or ‘Merge’. A value of ‘Replace’ will mean that any existing Subject Area is replaced using the Excel sheet settings. A value of ‘Merge’ will result in an existing Subject Area being updated to include the new content from the Excel sheet.

Each Excel sheet will be implemented as a separate Subject Area.

The Table/View/SapBwCube/SapBwDso/SapBwQuery cells can be explicit names or wildcards.

Appendix D. - Task Automation with ERP/CRM Integrator

How to automate the main Safyr operations without user intervention

Many of the tasks that are typically required for regular usage of Safyr can be automated.

These include:

- Extraction from the source application (SAP, Salesforce....)
- Creation of Subject Areas
- Expansion of Subject Areas
- Export of Subject Areas (only certain formats currently supported)

Full details of the options to achieve automation are described in the 'Safyr Task Automation Guide'.

Overview of the ERP/CRM Integrator Automation Approach

ERP/CRM Integrator uses an Excel file to record the settings required to run the tasks listed above 'unattended'. Most of the options that would be entered or selected manually to achieve a task are recorded in the Excel file, and a Command line file is then used to execute ERP/CRM Integrator, referencing the Excel sheet containing the options. An example of an Excel definition is below.

1	#CommandProperties		
2	PropertyName	PropertyValue	Description
3	RepositoryName	SAPBW-1	
4	CommandType	Extract	Type of the Command (limited to the values describe in this sample sheet)
5	MinimizeWindow	Yes	
6	CloseAfterCommand	Yes	
7	LogFileName	c:\temp\Safyr_SAP1-DT-Extract.txt	Option / DT = current date time as 'yyyymmdd-hhmmss'
8	LogFileAppend	No	
9			
10	ExtractSkipTest	Yes	
11	ExtractDataMode	FromLoadFiles	Full ; To LoadFiles ; FromLoadFiles (support depends on source system type)
12	ExtractDetailedLog	c:\temp\Safyr_SAP1-DT-Extract.xml	Option / DT = current date time as 'yyyymmdd-hhmmss'

The properties include the name of the ERP/CRM Integrator Repository to use for the Extraction (in this case a SAP System), whether ERP/CRM Integrator should be shut down after the Extraction completes, and the location of the Log file to be created to record details of the Extract.

An example of a Command file to use this Excel definition is below.

In this example, an extract from SAP is run, then a Subject Area is populated, followed by Expansion of the Subject Area, and finally an Export to JSON files is performed.

A sample Excel file and a sample Command file are provided with the Safyr and are available in the ERP/CRM Integrator Documentation folder.

Requirements for Safyr Task Automation

When ERP/CRM Integrator is run in this mode, it is still being executed as a Windows client application. The Command file can be Scheduled (e.g. using Windows Task Scheduler), providing the necessary resources are available to complete the task successfully. These include:

- The PC on which ERP/CRM Integrator is installed must be started
- Any Databases or Systems accessed must be available

- The passwords stored in ERP/CRM Integrator or in Registry settings must match those required to access the Source Application, database and/or Target export environment.

Full details of how to configure ERP/CRM Integrator Task automation are described in the 'ERP/CRM Integrator Task Automation Guide'.

Appendix E. - Limitations

Parallellization limitation

You can not run imports that affect the same dataset simultaneously, otherwise this results in the following failures and errors.

Error messages

```
11:12:19.821 [jobExecutor-927]

ERROR

c.c.d.c.s.job.impl.JobServiceImpl - Job ActiveJob
{id='4c43611f-4ab1-4272-a6b8-607f3ceaf6bf', name='Import', user-
='b351c493-428e-4c82-a18b-46089b1dbc4e', state= *ERROR* }



error:

'{"type":"MESSAGE","message":"An unexpected error occurred dur-
ing the execution of the job. Please check the log files for
more details."}'.
```

ERP/CRM Integrator log

```
<item LogTitle="the Collibra importer API reported a problem
with the job. The resulting status was not set to "COMPLETED"
as expected! / Result of the call: status = ERROR
message = {"type":"MESSAGE","message":"An unexpected error
occurred during the execution of the job. Please check the log
files for more details."}
file = C:\Users\Public\Documents\Safyr\Import\Z2L_100\clAs-
setImport00019.json" LogType="SINGLELOG" LogStatus="FINISHED"
LogResult="ERROR" StartDate="15.09.2020 11:12:25.647" EndDate-
e="15.09.2020 11:12:25.647"/>
```

dgc.log

```
2020-09-15 11:12:19.820 [jobExecutor-927] ERROR
o.h.e.j.batch.internal.BatchingBatch - HHH000315: Exception
executing batch [org.hibernate.StaleStateException: Batch
update returned unexpected row count from update [0]; actual
row count: 0; expected: 1; statement executed: HikariProxyPre-
paredStatement@1365540544 wrapping update dgc.REPRESENTATIONS
set CREATOR='b351c493-428e-4c82-a18b-46089b1dbc4e',
CREATIONDATE=1585043280717, LASTMODIFIED=1600161123489,
MODIFIEDBY='b351c493-428e-4c82-a18b-46089b1dbc4e', IS_SYSTEM-
='FALSE', OPT_LOCK=19, HL_EXCLUDE='FALSE', STATUS='00000000-
0000-0000-0000-000000005055', ASSET_TYPE='00000000-0000-0000-
0000-000000031008', VOCABULARY='88517912-c352-437b-8110-
5c2322b54f67', ARTICULATION=100.0, AVG_RATING=0.0, DISPLAY_NAME-
='LIFNR', RATINGS_COUNT=0, SIGNIFIER='A017 > LIFNR' where
ID='ffbb459a-3800-40ae-899c-764a3089be68' and OPT_LOCK=18],
SQL: update dgc.REPRESENTATIONS set CREATOR=?, CREATIONDATE=?,
LASTMODIFIED=?, MODIFIEDBY=?, IS_SYSTEM=?, OPT_LOCK=?, HL_
EXCLUDE=?, STATUS=?, ASSET_TYPE=?, VOCABULARY=?,
ARTICULATION=?, AVG_RATING=?, DISPLAY_NAME=?, RATINGS_COUNT=?,
SIGNIFIER=? where ID=? and OPT_LOCK=?
```

Resolution

1. In ERP/CRM Integrator, start the **Export Data Model wizard**.
2. At step 2b, go to the **Collibra settings**.
3. In the **Export Target Definition**, set the **Parallel Load Processes** to *1*.

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